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Defense Acquisition University

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ACQUISITION REVIEW QUARTERLY

Defense Acquisition University

Volume I, No. 1
Winter 1994

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Articles represent the views of the authors and do not necessarily reflect the opinion of the Defense Acquisition University or the Department of Defense.

Whenever masculine nouns or pronouns appear, other than with obvious reference to named male individuals, they have been used for literary purposes and are meant in their generic sense.

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SUBJECT: *Acquisition Review Quarterly*

It is with great pleasure that I greet you through this inaugural issue of the *Acquisition Review Quarterly (ARQ)*. This is the first publication specifically designed to address the needs of professionals across the full spectrum of defense acquisition. It will serve us as a mechanism for fostering and disseminating scholarly research on acquisition issues, for exchanging opinions, for communicating policy decisions, and for maintaining a high level of awareness regarding acquisition management philosophies. In addition to serving the Acquisition Corps, the ARQ will provide insight to others in the Department of Defense, Congress, industry and academe who have significant interest in how the DOD conducts its acquisition missions.

I intend the ARQ to be the premier acquisition publication within the government with acquisition defined in its broadest sense. I believe this is an instrument we can use to integrate the professional interests of the varied and diverse acquisition career fields, to infuse senior managers with a sense of community and common purpose, and to provide a forum for scholarly debate as envisioned by the Defense Acquisition Workforce Improvement Act.

This publication of the Defense Acquisition University deserves the encouragement and support of all in the acquisition community. I anticipate that we all will come to rely on the ARQ as one of our critical professional tools.

John M. Deutch

ACQUISITION AND
TECHNOLOGY

MEMORANDUM FOR DEFENSE ACQUISITION PROFESSIONALS

SUBJECT: *Acquisition Review Quarterly*

Welcome to the inaugural issue of *Acquisition Review Quarterly (ARQ)*, the journal of the Defense Acquisition University (DAU).

I encourage members of the Acquisition Corps and other readers from the Department of Defense, Congress, industry and academe to use this journal as your professional platform for discussion and exchange of policies, research, information and opinions. As policy makers, decision makers, managers and specialists, your professional participation and support will make this journal a successful and lasting forum.

Our objective is to keep readers informed. Our target readership is the senior members of the Acquisition Corps. Each issue will contain articles on policy, scholarly research on acquisition subjects, opinion and career field specific updates. All scholarly research articles will be refereed. The first two issues are being sent to incumbents of critical acquisition positions and to subscribers to Program Manager, a beginning list of approximately 22,000. The ARQ is free to government employees and is available through the Government Printing Office to non-government subscribers at a small cost. The Defense Systems Management College Press has accepted my request to manage, edit and publish the ARQ for the DAU.

I further encourage you to submit manuscripts for publication consideration, to offer to serve as referees within your discipline or field, and above all to let us know how we are doing and the direction the ARQ should be heading.

We in the DAU are excited to have this new publication and hope you will find it informative and beneficial.
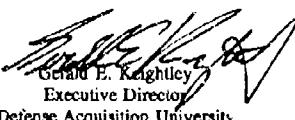
Gerald E. Kaghtley
Executive Director
Defense Acquisition University

ACQUISITION REFORM:

MAKING IT A REALITY

Colleen A. Preston

*I*t is certainly my pleasure to address you in this inaugural issue of the Defense Acquisition University (DAU) journal, Acquisition Review Quarterly (ARQ). *Nothing is more critical to our efforts to reform the acquisition process than our efforts to ensure the acquisition career field is recognized as the profession it is. The ARQ is a welcome addition to that process.*

INTRODUCTION

Before discussing our acquisition reform efforts to date, I would like to explain the approach I hope to take, under the direction of the Secretary, Deputy Secretary, and Under Secretary, to reengineer the acquisition system. My office, the focal point for development and implementation of a coherent and practical step-by-step plan for reengineering every segment of the acquisition system, purposefully is being kept small. I am chairing an Acquisition Reform Senior Steering Group composed of representatives from appropriate organizations within DOD. The Steering Group recommends change, coordinates proposed actions within their organizations, identifies participants for process action teams (PATs) and ensures implementation within their organizations.

However, the majority of my efforts and that of my office will be in leading and assisting integrated decision teams or PATs, which I believe are the key to successful acquisition reform. The PATs, will be cross-functional, cross-service, and cross-agency, and will be responsible for:

- Analyzing a current practice;

- Identifying the costs (money, time, personnel) associated with that practice;

- Identifying the alternative approaches consistent with the principles of the new acquisition system;

Mrs. Preston is Deputy Under Secretary of Defense (Acquisition Reform)

- Identifying incentives to make changes to the new practice;

- Recommending the best option for addressing the issue;

- Developing any new legislative, regulatory, or administrative changes required to implement proposed options;

- Developing measures of success in making the changes so DOD can track progress;

- Developing specific implementation plans, including training of DOD personnel; and

- Developing a process for follow-up to ensure the changes have been institutionalized (in particular to identify incentives and other mechanisms to ensure change to, and compliance with, the new processes and procedures).

The PATs will include operational experts and staff advisors (identified by the Senior Steering Group) from OSD, the Military Departments, and the Defense Agencies. The teams will also seek advice from other Federal agencies, congressional offices, and industry, as appropriate.

While we examine ways to reengineer DOD's business processes, other DOD components will continue to pursue changes in policies, practices, and regulations to make the existing system function more effectively. These efforts will be coordinated with me, either directly or through their steering group member, to ensure changes are consistent with the approaches being pursued by my office.

My sincere belief is that hundreds, if not thousands, of people within the Department of Defense know what could or should be done to change our practices and make them more efficient, while protecting the public interest and furthering the social objectives of our great nation. I want to provide the forum for your ideas to come to the forefront and be considered. You are the experts! I know I also speak for Deputy Secretary of Defense William J.Perry and Under Secretary of Defense (Acquisition and Technology) John M. Deutch when I say we look to you for guidance as we face the challenging times ahead. As you read through this somewhat detailed summary plan of action, think about how you might participate in this effort.

WHY CHANGE IS NECESSARY
The post-Cold War era poses new world-wide political, economic, and military security challenges for the United States. By fiscal year 1997, defense spending will have been reduced in real terms by more than 40 percent compared to 1985.

At the same time, the Administration is committed to maintaining a strong, effective force capable of deterring aggression against the United States and its allies and responding to threats anywhere our national interests are at risk. In order to meet the new challenges to national security and the requirements of national domestic policy, acquisition reform is imperative.

The DOD acquisition system is a web of laws, regulations, and policies adopted for laudable reasons over many years. The intent of the system was to ensure standardized treatment of contractors; prevent fraud, waste, and abuse; ensure that the government acquisition process was fair; check the government's authority and its demand on suppliers; and, enhance socioeconomic objectives. While the intent of these provisions is laudable, combined, the result is a cumbersome system which takes too long to satisfy customer requirements. In addition, the system places administrative burdens on both DOD and our suppliers that adds cost to the product procured. We can no longer afford these costs and meet mission requirements within current fiscal constraints.

THE SOLUTION
The world in which DOD must operate has changed beyond the limits of the existing acquisition system's ability to adjust or evolve. It is not enough to improve the existing system. There must be a carefully planned, fundamental reengineering of each segment of the acquisition system so we can respond to the demands of the next decade. In order to meet the national security requirement of the post-Cold War world and comply with national domestic policy, we must be able to procure state-of-the-art technology and products, rapidly, from reliable suppliers who utilize the latest manufacturing and management techniques; assist United States companies now predominantly dependent on DOD business to transition to dual-use production; aid in the transfer of military technology to the commercial sector; and, preserve defense-unique core capabilities.

We have begun the process of reform by targeting segments of the acquisition system that promise to yield immediate and substantial improvements. These actions will lead to reduced costs while ensuring that we maintain our technological superiority and sustain a strong, globally competitive national industrial base that can support the nation's future defense needs.

To assure that we have a department-wide focus in the reform effort, I chartered a "three-star" level Acquisition Reform Senior Steering Group to aid in establishing and prioritizing our planned initiatives and provide experts from the field to staff the various process action teams working on reform. Acquisition reform priorities will continue to evolve as we work through the Senior Steering Group as well as interface with other organizations and entities conducting related efforts, such as, Vice President Al Gore's National Performance Review (NPR), the National Economic Council (defense conversion), and the Defense Science Board Task Force on Acquisition Streamlining.

Many DOD initiatives will require coordination with, and support from, other agencies, such as the Department of Labor, the Small Business Administration, and various interest groups, such as industry, labor unions, and minority business groups. In addition, many of the initiatives could affect the entire federal government. We will work with the Office of Management and Budget (OMB), the Office of Federal Procurement Policy (OFPP), and, in particular, federal agencies with major procurement responsibilities, including National Aeronautics and Space Administration (NASA), General Services Administration (GSA), and Department of Energy (DOE) to ensure that acquisition reform initiatives are applied consistently throughout the government.

The first reform initiative was to develop a DOD position on all of the recommendations for legislative change contained in the 1800 page "Section 800" Acquisition Streamlining Panel Report. The Panel was chartered in accordance with provisions in Section 800 of the National Defense Authorization Act for Fiscal Year 1991, Public Law 101-510. We placed particular emphasis on two Section 800 proposals: the removal of impediments to the acquisition of commercial products by waiving all government-unique legislative requirements; and, streamlining the acquisition process by increasing the small purchase threshold to $100,000, and raising to $100,000 other thresholds in legislative provisions that apply only to federal contractors. The remainder of the recommendations fall within the following categories: Contract Formation; Contract Administration; Major Systems and Testing Statutes; Defense Trade and Cooperation; Intellectual Property Rights; Service Specific Acquisition Laws; and, Standards of Conduct.

After reaching a consensus internally, we began working with OMB, OFPP, GSA, and the NPR staff. The working group developed proposed legislation expanding the Section 800 recommendations to include all government agencies and incorporated NPR legislative proposals relating to acquisition. During this time, the Senate developed a proposed acquisition reform bill. To avoid confusion, the Administration decided not to introduce its bill. Instead, the Administration working group developed a "line-in-line-out" of the Senate bill, S.1587 (The Federal Acquisition Streamlining Act of 1993), that incorporated proposed Administration changes to the bill. Time did not permit consideration of the proposed changes during the last session of Congress. Congress is expected to begin hearings on this and other acquisition reform legislation in early February.

In addition to working on the formulation of the Administration position on the Section 800 recommendations, we submitted to OMB a legislative proposal to waive statutes relating to seven pilot programs. (Congress had requested the submission of pilot program candidates in Section 809 of the National Defense Authorization Act for Fiscal Year 1991, Public Law 101-510.) The pilot programs would "jump start" acquisition reform by allowing us to immediately buy certain commercial and commercial-like items using commercial practices. The candidates proposed are: Commercial Derivative Aircraft (CDA); Com-

mercial Derivative Engines (CDE); certain troop support items at the Defense Personnel Support Center (DPSC); Joint Primary Aircraft Training System (JPATS); Joint Direct Attack Munitions (JDAM); Fire Support Combined Arms Trainer (FSCATI); and Global Grid. The proposed pilot program bill, due to its inclusion of waivers to many socioeconomic statutes, proved controversial within the Administration and agreement on its provisions was not reached in time to be considered as part of the FY 94 National Defense Authorization Act.

We will continue to pursue action on the draft pilot program bill in early February 1994. It is essential that we continue to press for adoption of the pilot program authorization. The proposed bill asks for legislative relief unique to the systems acquisition process, and has not been considered to the extent of other recommendations (these laws were not reviewed by the Section 800 panel). Finally, even if the Section 800 reform package is enacted, it will take some time to revise regulations and train personnel. In the meantime, we are reviewing all recommendations for regulatory relief to assist programs in utilizing commercial products and processes. Putting the pilot programs in place now will achieve savings earlier, while keeping the momentum for change.

The DOD also participated in the NPR effort by developing a strategy and action plan relating to its early priority issues as part of the Defense Performance Review. That report is awaiting White House approval and printing.

Finally, we formed two PATs, composed of a cross-functional, cross-service, and cross-agency mix of individuals. The first PAT developed a time-phased plan for a 6-month, 12-month, and 24-month implementation of a standard Electronic Commerce/Electronic Data Interchange (EC/EDI) system for DOD small purchases. The plan provides for "one face to industry," and uses commercially available software for processing contract actions under the small-purchase threshold. This system will allow vendors to connect with commercial Value Added Networks that access the entire DOD system at one primary and one backup site, and receive data on all planned purchases. It will also enable the vendor to provide a quote and the government to make an award electronically. Individual systems already in place in the Services and DLA have shown tremendous improvements in productivity, lower item prices, and greater small business participation. A DOD-wide implementation began in January 1994. I am also co-chairing the government-wide EC/EDI team established by the President's October 26, 1993 Executive Memorandum. This will assure DOD and other federal agency EC/EDI efforts are accomplished in a complementary fashion.

The second PAT is addressing the issue of military-unique product and process specifications and standards. This issue is one of the most difficult and complex issues facing the Department. The team was tasked to analyze why government specifications and standards continue to be preferred despite the current (3-year old) policy preference for commercial standards. Also, they were to develop a plan to implement a preference for commercial and performance

standards and specifications except in cases where a government-unique product specification or process standard is the only practical alternative to ensure a product or service meets user needs. The PAT's draft report, which includes a detailed and forward thinking plan of action, is being circulated within DOD for comment. The initial report should be issued by mid-February. Additional PATs will be formed throughout 1994 to address other issues critical to acquisition reform.

HOW CAN YOU PARTICIPATE?

We know there a lot of people in the acquisition system with terrific ideas about how to change the process. Some of you have been successful in implementing these initiatives in your organizations. We need to hear about your ideas and proposals, along with concrete plans for implementing them. We also need summaries of initiatives you have implemented and have proven successful. We want to "share best practices." I encourage you to provide any information of this nature, including comments you have about the plans for acquisition reform, with or without attribution, to my office. The address is:

Deputy Under Secretary of Defense (Acquisition Reform)
3600 Defense Pentagon
Room 3E1034
Washington, D. C 20301-3600

In addition, as in any time of change, many rumors and misunderstandings are generated. I will be happy to respond to any questions you may have related to the acquisition reform process.

RESTRUCTURING DOD:

STUDY THE HIGH-TECH COMMERCIAL WORLD

Dr. Walter B. LaBerge

*P**eter Drucker wrote a delightful article in the February 2, 1993, Wall Street Journal entitled "A Turnaround Primer," which I hope the management of our Department of Defense (DOD) have read and taken to heart. Mr. Drucker suggests that when big businesses are in trouble and fundamental changes are required, internal management seldom can bring itself to do what needs to be done.*

Mr. Drucker observes that when the bottom falls out of a big business (witness Sears, GM and IBM), bringing in a new management team is almost always necessary to restructure that business. This new leadership, frequently of outside origin, must first redefine what Drucker calls the corporation's "business theory," the underlying focus which drives all of its subsequent business actions. When it fully understands what needs to be done, this new management sets about restructuring its corporation.

My fear is that a massive restructuring is about to occur within the DOD and those leading this effort will not have the experience to manage that vital but traumatic event. Thus, the intent of this article is to compare the applicability of recent U.S. high-tech corporation experience in dealing with similar business situations and see what lessons can be learned.

This, as one says in the military, is not a drill. Clearly the structure we have in DOD for defense acquisition must undergo major revision, both in its size and in its product orientation. My hope is that considerable knowledge of how to best restructure the department can be gleaned from recent high-tech business parallels.

Dr. LaBerge is a Visiting Professor at the Defense Systems Management College and the University of Texas. He has served as Assistant Secretary General of NATO, Assistant Secretary of the Air Force, Under Secretary of the Army and principal deputy to the Under Secretary of Defense for Research and Engineering. He has held numerous industry positions including Vice President, Corporate Development, for Lockheed.

The handwriting is on the wall. Our stockholders (the voting public), like those of Sears, IBM and GM, are in revolt. In their last open meeting, November 4, 1992, they threw out the incumbent management, giving to the new management a clear mandate. But the new team must get the nation on a sound financial footing and rapidly redirect its discretionary resources toward national needs of greatest concern.

True enough, different from IBM, GM and Sears, the undoing of our DOD business may not be our fault (in the end we did win in the Gulf and at the Fulda Gap). Yet, the DOD parallel with those companies may be closer than we think. All three of these troubled commercial giants of today were, until recently, the best in their businesses and darlings of the investment community.

The DOD has to understand the difficulties within our high-tech commercial world and how successful U.S. high-tech businesses have managed themselves during equally difficult times. Reviewing the successes and failures of companies like those three, Boeing, and others in times of crisis, can help DOD better address any inevitable restructuring.

SIMILARITY OF BUSINESS ENVIRONMENTS

On the argument that similar environments often demand similar responses, the following list of similarities between the high-tech business and DOD environments are presented. During the last five years in the high-tech business environment there have been an unusually large number of instances where there was a:

1. Substantial and rapid downward shift in the business base responsible for generating the income necessary to sustain current business and to fund new product development;

2. Profound change in the nature of the products needed by high-tech customers, shifting from traditional product lines to new ones made possible by evolving technology and new customer demands;

3. Recognition of an immediate need to readdress new business activities with reduced resources providing product plans consistently meeting new customer needs;

4. Recognition of the need for substantial reduction of operating costs to free up funds for future business investment without raising the debt load which, in turn, led to immediate substantial downsizing;

5. Recognition that while survival of the enterprise mandates these changes, a great many deserving people within the corporation will undergo substantial hardship;

6. Recognition that if the above measures are taken expeditiously and decisively, the investment community will back allocation of resources to restructuring of the business involved; and

7. Recognition that restructuring of the kind discussed actually works, and that marketplace acceptance of the restructured product positions leads to a healthy business and substantially improved stockholder approval.

If the current business situation of DOD is comparable to high-tech business as represented here, the new DOD management is likely to proceed down the same path.

RESTRUCTURING OBJECTIVES

Restructuring is a purposefully soothing term for an innately violent set of management actions that rapidly change the posture of a company with respect to its business environment. Almost always, restructuring reformulates a balanced, integrated set of new approaches to business in each of the following areas:

- market segment focus,

- future business investment capital allocation,

- operating costs permitted,

- necessary cost reductions,

- formation of favorable business alliances, and then

- total budget commitment - all rigorously enforced.

To explore further the possibility of learning from the similarities between DOD and U.S. high-tech businesses, the first four of these five areas of restructuring are discussed in detail below.

MARKET SEGMENT FOCUS

Commercial businesses, high-tech or other, have long recognized the need for different strategies depending on its marketplace position and the overall economic strength of that marketplace. In particular, the business world understands that strategies employed by companies dominating a market are different than strategies used by those who do not. Also, different commercial strategies are dependent on the ability of their customers to pay for major new equipment. Using the ways of contemporary engineering bureaucracy, the Figure 1 matrix

Historical Parallels

U.S. High-Technology Businesses

	Dominant Force	Challenger
"Good Times"	*Strategy A*	*Strategy B*
"Poor Times"	*Strategy C*	*Strategy D*

Strategy A: Drive competition out with new products

Strategy B: Challenge overall market leader

Strategy C: Marginally improve to protect broad market

Strategy D: Focus on niches in market
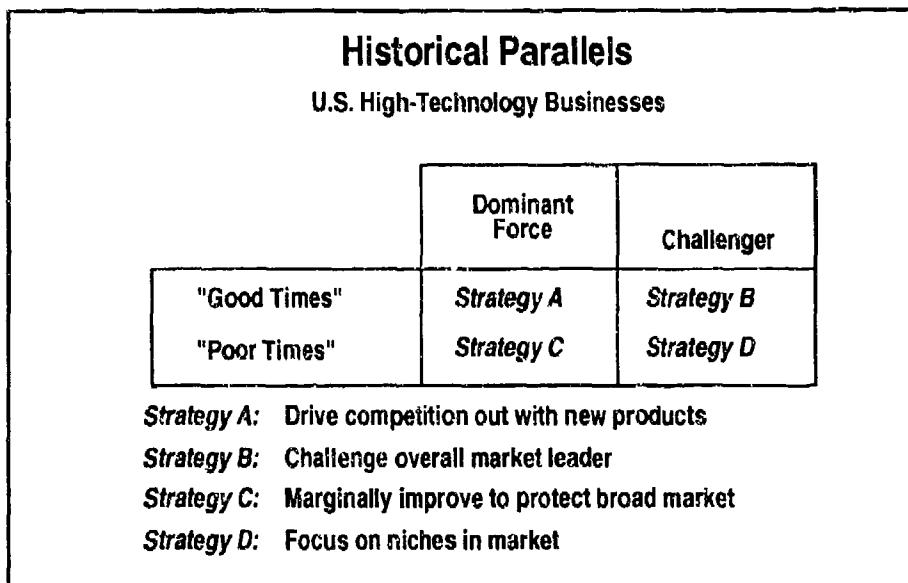
Figure 1. Viewpoints

reflects the correlation of these strategies with market position and overall business environment.

As depicted by this matrix, in "good times" the strategy of the dominant business leader must be to bring out new products for prosperous customers. In "good times" the dominant force is required to outspend its opponent efficiently. It can do this because generally it has greater financial strength upon which to draw. In Strategy A, the dominant supplier also uses advantages (cost, technology, etc.) which made it dominant, further increasing its ability to maintain its market lead.

Strategy A is the classic way that the electronics industry of Japan, once it achieved a reliability and product cost containment lead, drove out its U.S. competition in home electronics. Japan then invested to the extent that its lead in televisions, camcorders and the like has yet to be challenged by U.S.-based industry. Strategy A is also the way Boeing achieved dominance in the commercial aircraft business and drove out competitors Lockheed and Fairchild, and may have placed McDonnell-Douglas on the ropes.

Not surprisingly, Strategy A is also the strategy which allowed the United States to beat the Soviet Union. For example, in the air warfare business, the Soviet Military just could not compete with DOD's flood of new Strategy A products. Aircraft like the F-14, F-15, F-16, F-18, F-22, AWACs, B-1, B-2 and the threat of an ATF speak volumes for Strategy A. The same was true for naval ships and army tanks and guns.

However, when times are "poor" things are quite different. When customer orders are slack, and investment capital is scarce, the dominant United States high-tech giants are forced to change strategies. Dominant companies, perforce,

must move to Strategy C, that of providing its customers with increased capability at reduced cost, using their customer's installed base to their own advantage. The problem with Strategy C for the dominant industry leader generally is a very wide range of customers being solicited by different small companies using Strategy D. Each of these is trying to obtain a niche-hold in the dominant supplier's large business. To combat Strategy D, the large corporation must meter its resources efficiently across the gamut of its businesses. This capability of the dominant supplier to offer upgrades to its customer's installed base is the only way it can afford, in "poor times," to address its wide spectrum of customer needs.

Fortunately, using the customer's installed base can prepare the way for the next round of "good times" when customers can afford to replace major systems in the field. Readiness for "good times" can be simple if the dominant business ensures that preliminary design of future products incorporate, without substantial change, subsystems developed for existing inventory.

What has been described above is the way the commercial aircraft world has always addressed extreme fluctuations in business cycles. Boeing, for example, has always been particularly good at nursing its customers through "poor times" to capitalize on their dependence when "good times" come back. Unfortunately, Strategy C was not the recent strategy followed by IBM, much to its current distress. It appears that IBM continued, long after it should have, to emphasize new mainframe initiatives to an extent that it could not protect the broad spectrum of its business base. Now, IBM sees itself forced out of niches which it did not adequately protect and which now have become increasingly important expanding business areas.

Until recently, DOD appears to have been copying IBM rather than Boeing by staying with the "good times" strategies even though the era of limitless investment capital is clearly over. The military services seem insistent on following Strategy A: design and production of whole new platforms when it is clear they are out-pricing their marketplace. Further, parallel to an IBM over-commitment to elegant mainframes, most Services are attempting to introduce product sophistication well beyond DOD's current needs. The parallel is quite interesting because both IBM and the old DOD seem to have misread their market successes. Unable to believe it could be challenged, especially by the "little people" in its business, IBM lost. The Services and DOD also appear to misread the lessons of the Gulf War and believe that they, too, cannot be challenged effectively by the Third World.

The old DOD does not seem to understand the competition does not wish to compete with the United States on a broad front, but only to keep the country out of its local niche. Further, the old DOD has not realized that the present threat of military force comes not from risk of defeat in battle (as might have been the case at the Fulda Gap). It comes, more likely, from the risk of never deploying DOD forces because battle casualties would exceed the willingness

of U.S. citizens to underwrite further deployment. Further, the old DOD did not realize, because assessments were still being completed, the advantage we had in weaponry in the Persian Gulf. In no way was Iraq's Soviet-provided material the best of what the USSR had available. However, arms bazaars around the world now sell the best, from what the USSR has to offer and the best of many other non-U.S. armament industries.

In many respects, without any military-industrial complexes of their own, today's independent operators probably can arm themselves better than the Soviets of the olden days. The USSR of yesteryear had to use only the products of its own industrial capacity. The entrepreneuring Third World now can buy from them or the rest of the world, and less perhaps than from us. Worse yet, the financial difficulties of all governments make today's situation more difficult, since they will need substantial volumes of outside sales to produce weaponry economically. While we limit our weapon sales to arming only our friends, these we do not wish to arm find arms salesmen and less-than-friendly Third World markets.

The ability of one country to buy high-quality weapons from others probably has been underestimated substantially . If this is true, the superiority we brought to the Gulf several years ago may be difficult to sustain without a strong effort to respond to improved capabilities of potential enemies. This problem, stated in these terms, doesn't seem much different from that of our high-tech commercial world counterparts.

Back to Drucker's point: a proper business theory is crucial to knowing how to restructure a business. In this sense, the new DOD must formulate what it is trying to do before redefining the acquisition objectives of the Department. That direction is beginning to emerge from the new DOD. To help guide that formulation, a previously published work may be useful.

The National Research Council (NRC) recently assessed the technological opportunities open to the U.S. Army during the coming decades. Before embarking on that study, the NRC attempted to write down the prime objective of an acquisition program in an era of changed threat and reduced budgets. The NRC study suggested three key objectives shown in Figure 2, a briefing chart from that study.

The NRC recommendation that DOD commit to continuous technical superiority of U.S. forces, even in a severely-declining budget environment, reads much like the Strategy C. Such a strategy, if implemented, will permit neither long, drawn out new platform programs nor extensive storage on the shelf of technology not immediately usable.

FUTURE INVESTMENT CAPITAL ALLOCATION
If one believes the principal objective of the new DOD acquisition process will become one of niche-influence protection, it becomes easy to guess what the new administration's acquisition emphasis must be. The three fundamental

Technology Implementation Policy
A Candidate Strawman

To commit to:

- maintaining technology superiority of Army forces wherever and whenever we may deploy;

- increasingly leverage others for technology and therefore maximize coupling to other services, SDIO, universities, venture capital innovation, and commercially developed technology and

- notwithstanding budget reductions, be prepared to surge to meet mobilization requirements within a realistic warning scenario.

Figure 2. Implementation Policy

requirements of such protection strategies, shown below appear to be not too dissimila from those of its commercial counterpart:

1. To have exceptionally good intelligence on what our potential adversaries (competition) intend to do and what capabilities they possess;

2. To be able to react quickly (hit the marketplace) upon understanding of a requirement to deploy forces (product); and

3. To possess the capabilities to defeat, quickly and decisively, its enemy at acceptable casualty levels (costs), were conflict necessary.

Even in a period of limited budgets, our armed forces must have these critical capabilities. Whether anything more can be provided to prepare for future threats appears uncertain. This will depend on total acquisition budgets and the costs of responding to the current niche-protection environment.

The ability of the U.S. to deploy its military forces continuously will become more difficult as potential adversaries become able to purchase military equipment of Gulf War quality. Well-financed adversaries will have access to sophisticated armament industries struggling to keep afloat with limited, recession-induced budgets. The classic example of this Third-World ability to acquire and use sophisticated armaments is that experienced by George Custer and his cavalry at the Little Big Horn. Without a defense industrial base of their own,

the Ind.ans, nevertheless, ended up there with more weapons of superior firepower (i.e., Winchesters) than Custer's forces.

If DOD pursues the scenario of required niche-protection, any student of the open literature can guess at a list of probable U.S. acquisition requirements. As a minimum, a potential niche-adversary can be expected to do the following:

- Put at greater risk our first-in ground forces, Army or Marine, by threatening to continue to move forward with heavy armored forces instead of digging in as did Iraq in the Gulf;

- Threaten our fixed-entry installations, both port and airfield based, with attack by theater ballistic missiles armed with either conventional or chemical/biological warheads, or by attack in numbers with cruise missiles of the type the U.S. demonstrated in the Gulf;

- Threaten to escalate probable U.S. casualties by introducing new mining techniques made possible by the ever increasing capability of affordable microprocessor chips; and

- Threatening to restrict fighting to urban areas where we now have little capability and where the threat of excessive noncombatant casualties may preclude our willingness to engage.

All of these niche-strategies available to our enemies are open to redress by early use of available advanced technology, faster than an expected acquisition of these capabilities by an adversary. However, these niche responses, typical of Strategy C, cannot be implemented for lack of funds as long as a Strategy A philosophy commands all available funds.

Secretary of Defense Les Aspin conducted an open-book, bottom-up examination of current programs set against priorities of his administration in the selection of programs. These Aspin criteria for DOD priorities are straightforward and believable, and are to support U.S. national interests in a:

- new and dangerous world of expanded nuclear capability,

- world of much regional unrest,

- world requiring support to newly emerging democracies, and

- highly competitive high-tech world where the capability of DOD to compete is inexorably linked to the ability of U.S. commercial high-tech enterprises to dominate their marketplaces.

These Aspin foci are not inconsistent with Strategy C.

OPERATING COSTS PERMITTED AND NECESSARY COST REDUCTIONS

Experience has shown that the hardest things to accomplish in any commercial downsizing are cutting personnel substantially and simplifying organization structure. Organizational change, though intended to simplify, inevitably seems to add additional layers to the existing organization.

How will the Secretary approach any organizational change? Dimensions of the task ahead are reflected in the charts in Figure 3 which show the drawdown anticipated by the Bush Administration at the time of budget submission. The situation shown will probably be much worse since both the Bush and Clinton administrations announced further cuts. The first chart shows the drawdown by manpower category: government civilian, uniformed and industrial base. The second chart shows the particularly horrendous hit taken by major industrial producers..

The information on these charts has been used to argue for improving the defense industrial base, which, though well intentioned, probably cannot be championed in the present budget environment. However, to the corporate downsizer another message is clear, the civilian staff which supports a decreasing military force is going down far slower than that fighting force. The civilian force is, however, decreasing infinitely more slowly than the force which produces the equipment for the fighting forces. To the experienced corporate downsizer, this disparity indicates a runaway overhead expansion of life-threatening character to any corporation. It clearly would be the Secretary's first area of attention in a restructuring.

Industry can provide valuable insight on how to cut overhead costs. Some techniques follow:

1. Reduce vertical integration within a corporation, (i.e., examination of functions which might, from a cost-effectiveness standpoint, be better performed by a competitive nongovernment supplier). Examples of where major savings might be achieved are:

    a. Full civilianization of schoolhouse functions where military expertise and equipment function and usage are taught by mixed staffs of civilians and military;

    b. Expansion of civilianization of technical functions performed within the Services to capitalize on the longer career opportunities open to civilians; and,

Industry Loses Most of the People

	Industry Personnel	Military Personnel	Civilian Personnel

Millions
4.0

3.0

2.0

1.0

0

| 3.1 | 2.3 | 2.0 | 1.6 | 1.0 | 0.9 |

1991 1997	1991 1997	1991 1997
Down 27%	*Down 19%*	*Down 13%*

Source: DOD FY93 Budget Submission

Hardware Producers Get Hurt Most

Employees in Millions

Hardware Producers | All Other Employees

2.0

1.5

1.0

0.5

0.0

1991 1992 1993 1994 1995 1996 1997 | 1991 1992 1993 1994 1995 1996 1997

Down by 40% | *Down by 22%*

Source: DOD and BLS

Figure 3. **Defense Budget Outlook**

c. Reduction of Service-connected, intermediate maintenance functions consistent with contemporary civilian practice, industry commitment to increased equipment durability and expected comparatively short-term force deployments.

2. Address organizational changes in a conceptual top-down manner, streamlining business methods rather than the same structural way.

3. Reduce the number of infrastructure facilities performing the same function. Be ruthless in ignoring the nuances of rationale that allowed them to survive previous cost-cutting exercises. (An example is consolidating the Service infrastructures for guided missile development — a difficult, but probably necessary, merger).

4. Provide those involved with change motivation to help rather than resist. Consider the touchy case of Service golf courses. As a matter of principle, one might expect the number of Service-operated golf courses to be reduced in proportion to the number of Service personnel allowed by new budgets. Not so. There being no benefit (sales proceeds revert to the U.S. Treasury) to the losing organization, considerable opposition can be expected. Yet, if the fair land value of excess golf courses could be exchanged for training areas, an immediate accommodation could be expected.

None of these proposed restructuring initiatives will be popular. If they were palatable, they would have been accomplished long ago. However, a massive change in balance between product (fighting units and factories) and overhead must be accomplished within DOD. This task traditionally has been extremely difficult for government institutions to do from within, and difficult and ineffective to define by part-time committees on the outside.

A suggestion in keeping with the general theme of this essay is to bring into DOD, for one year, a team of battle-tested, industry-restructuring experts. They would provide the Secretary with proposals on how to downsize DOD in a way one might if it were industry instead of government. To make such a scheme work, temporary relief from some of the conflict-of-interest provisions of the Congress and White House might have to be sought. Similarly, downsizing of administrative functions without ruining their ability to respond to legitimate needs may require relief from certain statutes and personnel policies during the period of most intense downsizing.

FORMATION OF FAVORABLE BUSINESS ALLIANCES
At least two different opportunities to form beneficial alliances in DOD acquisition can be drawn from the experiences of IBM and Boeing. Each alliance is

of a different nature and examples of other forms of alliances doubtlessly can be drawn from more in-depth looks at this subject.

Beyond this look at what industry has done within its confines, an intense cooperative link between commercial institutions and the military is also foreseen by the Clinton Administration. Apple and IBM have recently concluded a most unusual agreement. While each company maintains its separate competitive business integrity, programs are underway to ensure compatibility of system architecture, next-generation software interfaces and protocols and, in some cases, hardware. Apple and IBM have come together for one reason; each believes it is to its benefit to do so.

If such cooperation can be achieved between natural business enemies, it ought to be much easier to achieve between organiza´´ons of less directly competing interests. A number of such mutually beneficial opportunities to cooperate exist and surely will be pursued by the new administration as a better way to use available funds. Opportunities expected to be first explored through jointly funded projects include:

- commercial producers,

- national laboratories,

- other government departments, and

- among the Services.

Dr. Claire Thorton, Director of the Army Electronic Technology Development Laboratory (ETDL), has implemented a broad set of alliances with university and commercial communities. The DOD might use this ETDL connection as a prototype for DOD-wide application. Evidence in such alliances will be strongly pushed by Aspin and his senior staff. It behooves the Services to ensure that these kinds of alliances are evident in the programs examined in the bottom-up review. Traditional Service reluctance to these kinds of relationships will have to be overcome if their programs are to survive.

Although industry has not excelled at achieving internal organizational cooperation, here too, its experiences in facing organizational reluctance to cooperate may be valuable to DOD and should be sought. The other industrial example presented here is suggested by watching how commercial aircraft producers, like Boeing, conduct business with their next-tier supplier base. Boeing, for example, has had a reputation for not being an easy company with which to work as a supplier. However, despite that reputation, Boeing continues to have a broad base of suppliers who continue to invest their own money into advanced technology, product design and contemporary tooling.

The 1989 Defense Science Board report provides a useful examination of the applicability of commercial aircraft business practices to DOD, whose relationships DOD should study in detail. In severe budget crunches, it will be important to encourage its subtier suppliers to invest their money in military businesses. The obvious way to accomplish this is to force military use of technology with parts of eventual application to commercial-world applications. Further, this effort to obtain outside investment in DOD business can also be accelerated by upgrading current military hardware.

CONCLUSIONS

Long articles usually merit short summaries. Hopefully, the salient points can be provided thusly.

The principal thesis of this essay echoes the introductory thoughts of Peter Drucker, that restructuring is hard to do when led by current management. Though new senior officials will define this restructuring, most of the details will have to be implemented with staff currently in place. This article points out that the experiences of the U.S. commercial high-tech world in similar situations can be helpful to DOD in its own restructuring.

Analysis presented in this article suggests that the situations are similar enough to merit close scrutiny, especially in the areas of product strategies, cooperative programs, and downsizing techniques. Therefore, the premise of this article is that people concerned with DOD downsizing learn as much as possible from past equivalent actions which attacked nearly the same problems DOD faces today.

COST OVERRUN OPTIMISM:
Fact or Fiction?

Major David D. Christensen, USAF

*P*rogram managers are advocates by necessity. When taken to the extreme, program advocacy can result in the suppression of adverse information about the status of a program. Such was the case in the Navy's A-12 Program. In A-12 Administrative Inquiry, Beach (1990) speculates that such "abiding cultural problems" were not unique to the Navy. To test that assertion, this paper examines cost overrun data on 64 completed acquisition contracts extracted from the Defense Acquisition Executive Summary database. Cost overruns at various contract completion points are compared with projected final cost overruns estimated by contractor and government personnel. The comparison shows that the overruns projected by the contractor and government were excessively optimistic throughout the lives of the contracts examined. These results were found insensitive to contract type (cost, price), contract phase (development, production), the type of weapon system (air, ground, sea), and the military service (Air Force, Army, Navy) that managed the contract.*

According to Gansler (1989, p. 4), the average cost overrun on a major defense contract has been about 40 percent. Although some of the causes of cost overruns are beyond the control of program managers, supporting an unrealistically low estimate of the final cost of a defense contract can only harm the program in the long run. The cancellation of the Navy's A-12 program in January 1991 is a highly publicized example of this problem.

Chester P. Beach (1990), the Inquiry Officer of the A-12 cancellation, reported that pessimistic projections regarding the program's cost were suppressed to protect the program and the careers of key managers. When Secretary of Defense Dick Cheney canceled the program in January 1991, he complained

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that no one could tell him its final cost (Morrison 1991). In fact, there were many estimates of the program's completion cost; some estimates were more than $1 billion higher than the ones supported by the government program office and by the contractors. The problem was the delayed and reluctant communication of the pessimistic estimates to key decision makers above the government program office. Although no one can say with certainty that the timely communication of more realistic estimates would have saved the A-12, it seems likely that at least part of the $1.35 billion in excess progress payments made to the contractors could have been avoided (Feber & Math, 1991).

More realistic estimates and a culture that will tolerate them are needed. Program managers/directors are necessarily advocates of their programs. However, program advocacy is no excuse for suppressing critical information about a program's cost, schedule, or technical performance. In an acquisition policy letter, J. J. Welch (1991), Assistant Secretary of the Air Force (Acquisition), wrote:

> *A program director (PD) must be an advocate of his or her program.*
> *. . . The PD's advocacy must not cross the line into attempting to*
> *"sell" the program, but must clearly be viewed as supportive to the*
> *user's requirements. The PD must articulate the pros and cons, as*
> *well as the "maturity curve" status, in a clear and comprehensive*
> *manner to preclude unfulfilled expectations or surprises. Such ad-*
> *vocacy must be based on honesty and integrity to accurately portray*
> *program status.*

Regardless of this policy statement, Gansler (1989, p. 212) reports that the majority of the program managers' time is spent "selling" their programs to budget committees. In addition, research has shown that, once a program is more than 15 percent to 20 percent complete, it is highly unlikely that the final cost overrun will be less than the present cost overrun (Abba, 1992; Christensen & Payne, 1992; Heise, 1991; Wilson, 1991). Despite these facts, contractor and government program managers often claim optimistically that dramatic recoveries from cost overruns are possible.

Using information extracted from the *Defense Acquisition Executive Summary* (DAES) database, this paper documents the optimistic forecasts of contract completion costs on 64 completed contracts. Average cost overruns at various contract completion points are compared with projected final cost overruns estimated by contractor and government personnel. The comparison shows that the overruns projected by the contractor and government were exceedingly optimistic throughout the lives of the contracts examined. These results were found insensitive to contract type (cost, price), contract phase (development, production), the type of weapon system (air, ground, sea), or the Military Service that managed the contract.

BACKGROUND

Cost overruns and projected final overruns are regularly reported on cost management reports prepared by the contractor. These reports include the Cost Performance Report (CPR) and the Cost/Schedule Status Report (C/SSR). Department of Defense Instruction 5000.2 stipulates that a CPR be submitted for contracts which require compliance with the Department of Defense (DOD) cost/schedule control systems criteria (C/SCSC) (Department of Defense, 1991). For contracts not required to comply with the criteria, the C/SSR is usually required.[1]

Cost/schedule control systems criteria are not a management system. Instead, they establish minimal standards for the management control systems used by the contractor and have two objectives:

1. For contractors to use effective internal cost and schedule management control systems and

2. For the government to be able to rely on timely and auditable data produced by those systems for determining product-oriented contract status (Department of the Air Force [DAF], 1989).

Implicit in these objectives is the assumption that, if the contractor's management control systems comply with the criteria, the data generated by those systems are reliable (Christensen, 1989).

Data summarizing a contract's cost and schedule performance are listed in the cost-management report. Key data elements of the report are shown in Figure 1. The budgeted cost of work scheduled (BCWS) is the sum of budgets allocated to time-phased elements of work on the contract, known as work packages and planning packages. The cumulative expression of these budgets, the performance measurement baseline, takes on a characteristic S-shaped curve. The end point of the baseline, the budget at completion (BAC), represents the total budget of all the identified work on the contract.

As shown in the figure, the contractor also reports an estimate of the final cost of the contract, termed the estimate at completion (EAC). The EAC is an extrapolation of the cumulative actual cost of work performed (ACWP) to the end of the contract. If the projected final cost differs from the total budget, the contractor is predicting a cost overrun at completion. It is often revealing to compare the predicted cost overrun at completion to the present cost overrun. If the present overrun is worse than the predicted final overrun, the contractor is predicting effectively that the cost of the remaining work on the contract will

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1 Compliance to C/SCSC is required on significant contracts and subcontracts within all acquisition programs. Significant contracts are research, development, test and evaluation contracts with an estimated cost of $60 million or more (in fiscal 1990 constant dollars) or procurement contracts with an estimated cost of $250 million or more (fiscal year 1990 constant dollars) (Department of Defense, 1991, p. 11-B-2).

be less than budgeted. For this paper the present cost overrun is defined as the difference between the cumulative budgeted cost for work performed (BCWP) and the cumulative ACWP.[2] The BCWP is the same number as BCWS but is recorded when work is actually accomplished. Clearly, if the cost of the completed work exceeds the budget, a cost overrun is identified. If the cost overrun is significant, it is investigated to determine the cause. Hopefully, the timely and disciplined analysis of significant overruns will result in corrective action before the problems become serious.

The effectiveness of variance analysis depends on organizational culture. In a healthy culture a variance is considered an opportunity for improvement. In an unhealthy culture a variance is bad news, and individuals or even organizations responsible for unfavorable variances may be punished. The result of this "shoot the messenger" culture can be the suppression of adverse information about a contract's status.

Although routine analysis in the A-12 program revealed adverse trends, the significance of the unfavorable cost and schedule variances was not revealed to senior civilian decision makers above the government program office. According to Beach (1990), the projected final completion costs supported by the contractor and the government program manager were unrealistic. For example, at the 37 percent completion point, the A-12 contractors reported a cost
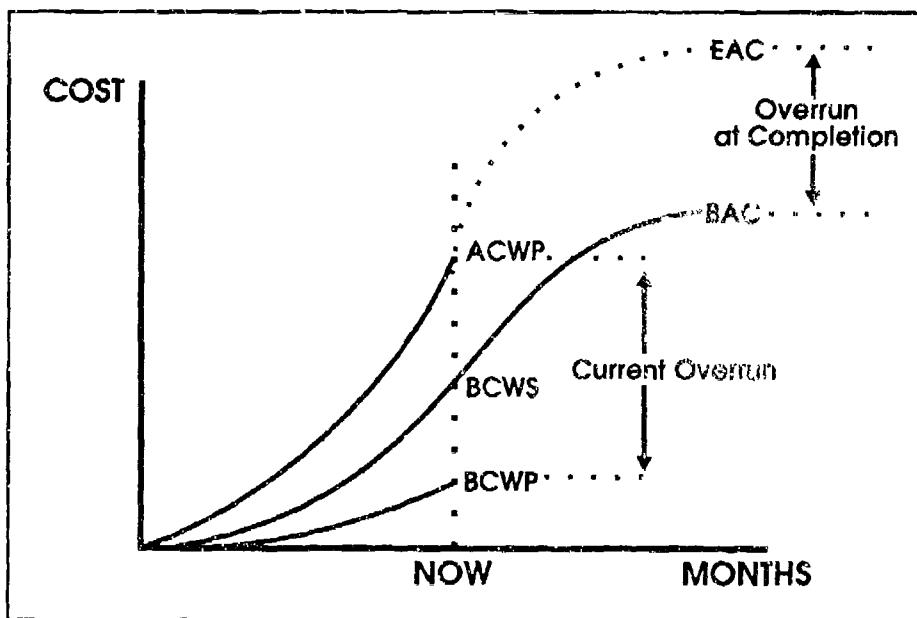

Figure 1.

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2 The difference between BCWP and ACWP is defined as a "cost variance" in the *Cost/Schedule Control Systems Criteria Joint Implementation Guide* (Department of the Air Force, 1987). Here, the focus is an adverse cost variance, termed cost overrun.

overrun of $459 million and a projected cost overrun at completion of $354 million (Campbell & Fleming, 1991). The government program manager's estimated final overrun was slightly higher than the contractor estimate yet less than the overrun to date.

Apparently the need to present an optimistic picture was a dominant consideration that effectively suppressed more realistic estimates. Near the end of his report, Beach (1990, p. 41) speculates that this "abiding cultural problem" was not specific to the A-12 but was a problem common to other major defense programs:

> *There is no reason to believe that the factors which made these officials respond the way they did are unique to this Military Department. Indeed, experience suggests that they are not. Unless means can be found to solve this abiding cultural problem, the failures evidenced in this report can be anticipated to occur again in the same or a similar manner.*

This paper provides evidence that supports this assertion by examining available cost data on completed contracts.

METHODOLOGY

The purpose of this study was to determine if the overruns at completion projected by contractor and government personnel are unrealistically optimistic. Research has established that, once a contract is 15 percent complete, the final cost overrun will exceed the cost overrun to date (Abba, 1992; Christensen, 1989; Heise, 1991; Wilson, 1991). Thus, a projected overrun at completion is defined as unrealistically optimistic if it is less than the present cost overrun.

To test the hypothesis, averages of the present cost overrun, the projected cost overrun at completion, and the final cost overrun were computed from a sample of 64 completed contracts extracted from the DAES database (Department Of Defense, 1991). This database contains contractor cost and schedule performance data on more than 500 defense contracts summarized quarterly by government program offices since 1970 (Christle, 1981). Because most of the contracts in this database are C/SCSC-compliant, the data are considered reliable.

Although the sampling technique was purely judgmental, the number and variety of contracts are considered sufficiently large to be general in nature. The period of performance for these contracts ranged from 1971 to 1991. Table 1 lists descriptive statistics on the average final cost overruns in the sample. For sensitivity analysis, the sample was divided into several categories, including contract type (price, cost), contract phase (development, production), the type of weapon system (air, ground, sea), and the Service managing the contract. For each category in the table, the number of contracts and the average, maximum, and minimum values for the final overrun are listed.

Table i
FINAL COST OVERRUN ON 64 CONTRACTS

Category	percent OF BUDGET				$ MILLIONS		
	Number	Avg	Min	Max	Avg	Min	Max
Fixed Price	41	20	-3	109	34	-3	407
Cost	23	14	-1	46	41	-2	493
Development	25	21	-1	109	38	-2	407
Production	39	16	-3	46	35	-3	493
Air	43	18	-3	109	45	-3	492
Ground	13	21	5	45	23	7	42
Sea	8	12	0	38	12	0	36
Air Force	18	19	-1	109	49	-2	407
Army	28	20	-3	46	21	-3	46
Navy	18	13	0	46	47	0	493
ALL	64	18	-3	109	36	-3	493

Equations 1, 2 and 3 define the current cost overrun, the projected cost overrun at completion, and final cost overrun. Of the three overruns, only the projected cost overrun at completion is an estimate, showing the difference between the budget and the estimated completion cost. The others are simply the difference between the budget and actual cost of the work.

Current overrun (CO) = Cumulative (Cum) BCWP - Cum ACWP   (1)
Overrun at completion (OAC) = Contract budget base (CBB) - EAC   (2)
Final overrun (FO) = CBB - Final ACWP   (3)

To normalize the data, the overruns were converted into percentages using Equations 4, 5 and 6. For the current cost overrun percentage, the cumulative BCWP was used. For the others, the CBB was used. The CBB is defined as the budget for all authorized work on a contract and includes the management reserve budget.

Current overrun percentage = 100*(CO/Cum BCWP)   (4)
Overrun at completion percentage = 100*(OAC/CBB)   (5)
Final overrun percentage = 100*(FO/CBB)   (6)

Each type of overrun (current, at completion and final) was averaged for each category by dividing the number of contracts in that category into the total overrun for that category. The averaging was done at various stages of comple-

tion ranging from 10 - 100 percent completed (Equation 7).

Percentage completed = 100*(Cum BCWP/CBB) (7)

Data earlier than the 10 percent completion point were not considered sufficiently reliable. It can take as long as one year from contract award for the contractor to demonstrate C/SCSC compliance. Until then, the data on the cost performance report are suspect.

As shown in Table 2 in null form, there were three hypotheses. Hypotheses one and two compare the average current overrun to the average overrun at completion by the contractor and government during various stages of contract completion. In hypothesis three, the average overruns at completion by the contractor and government are compared.

Table 2
HYPOTHESES TESTED

Null Hypothesis	Interpretation
$H1_o$: CO ≤ KOAC	Contractor's OAC not optimistic
$H2_o$ CO ≤ GOAC	Government's OAC not optimistic
$H3_o$: GOAC ≤ KOAC	Government more optimistic than contractor

KOAC = Contractor's overrun at completion
GOAC = Government's overrun at completion

If hypothesis one is rejected, the KOAC is unrealistically optimistic. If hypothesis two is rejected, the GOAC is unrealistically optimistic. If hypothesis three is rejected, the contractor is more optimistic than the government regarding the projected overrun at completion. A one-tailed "t test" was used to evaluate each hypothesis at the 95 percent level of confidence.

RESULTS

As illustrated in Figure 2a, the hypotheses were generally confirmed. From as early as the 10 percent completion point, the optimism of the projected cost overrun at completion is apparent. Throughout the life of the contract, this estimate was found to be lower than the present and final cost overruns. Also note that the average overrun at completion projected by the contractor was more optimistic than the average overrun at completion projected by the government program office.

Figure 2b shows that the difference between the overruns is statistically significant through most stages of contract completion. When the one-tailed "t statistic" exceeds a critical value of 1.67 (t_α = .05 statistic > 1.67), the difference is defined as significant at the 95 percent level of confidence.

As illustrated in Figures 3 through 6, these results were generally insensitive regarding the contract type, contract phase, type of weapon system, and the military service that managed the contract. To facilitate comparisons, the scales of the graphs are the same. The statistical significance of the differences between the overruns was generally confirmed for each category examined. The details, however, are not reported here.

CONCLUSION

Based on an analysis of 64 completed contracts, the overruns at completion predicted by the contractor and by the government program office were unrealistically optimistic. From as early as the 10 percent completion point through
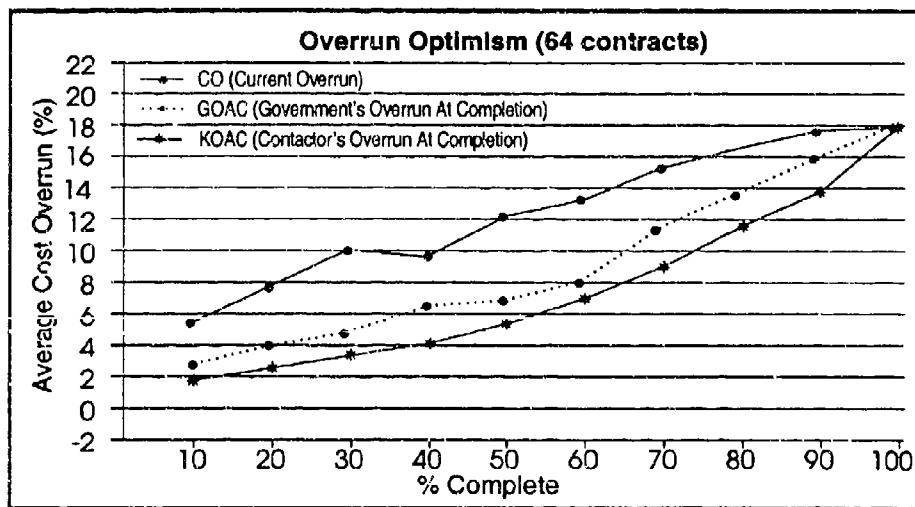
Figure 2a. **Average Overruns For All Contracts in Sample.**
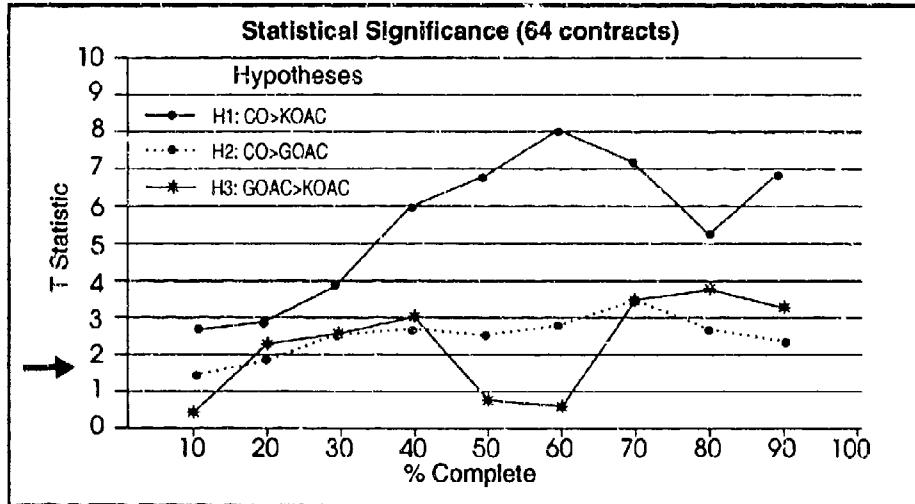
Figure 2b. **Hypotheses Confirmed (For $T_{\alpha = .05}$ statistic > 1.67).**

the end of the contracts, the predicted final overruns were less than the current overruns reported on the contracts. Although the estimates supported by the government program offices were less optimistic than the contractors' estimates, neither was found to be realistic.

Donald J. Yockey (1991, p. 36), then Under Secretary of Defense(Acquisition), called for more realism throughout the acquisition process, including estimating realism. We can't afford to understate, sit on, or cover up problems in any program—at any time—at any level. They must be brought forward.
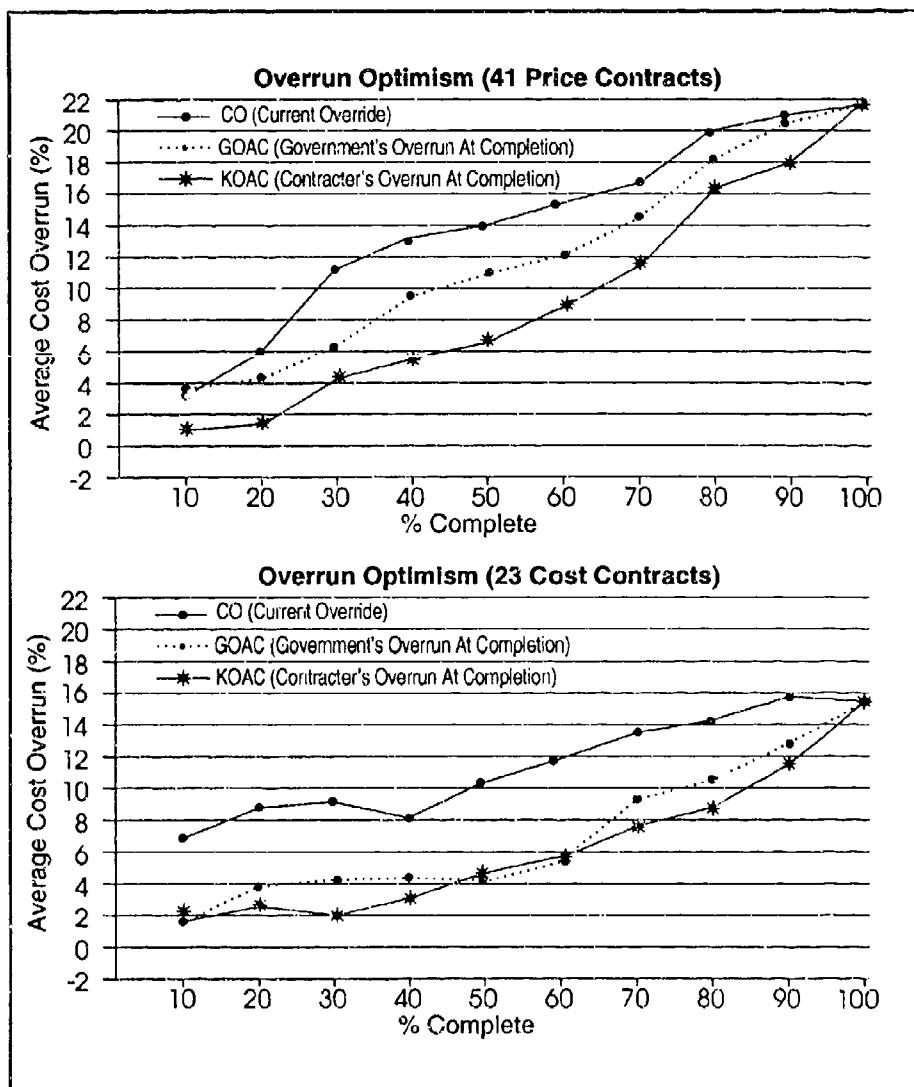
Figure 3. **Average Cost Overruns by Contract Type.**

This includes not just "show stoppers" but also "show slowers." I can't stress this strongly enough.

In an interview with Wayne Abba, a respected analyst at the Office of the Under Secretary of Defense (Acquisition), Mr. Abba commented that adverse trends can be reversed if management pays attention to them (Abba, 1992). Until contractors and program offices are willing to support and advance realistic assessments of a program's status, the attention and expertise of upper-level management is postponed, undoubtedly, in the long run, to the detriment of the program and nation. The famous economist Keynes once stated that, in the long-run, we are all dead (Horngren & Foster, 1991). Postponing or h... ng adverse information about a program may be an effective short-run strategy; but, in the longrun, it could result in the cancellation of the program.
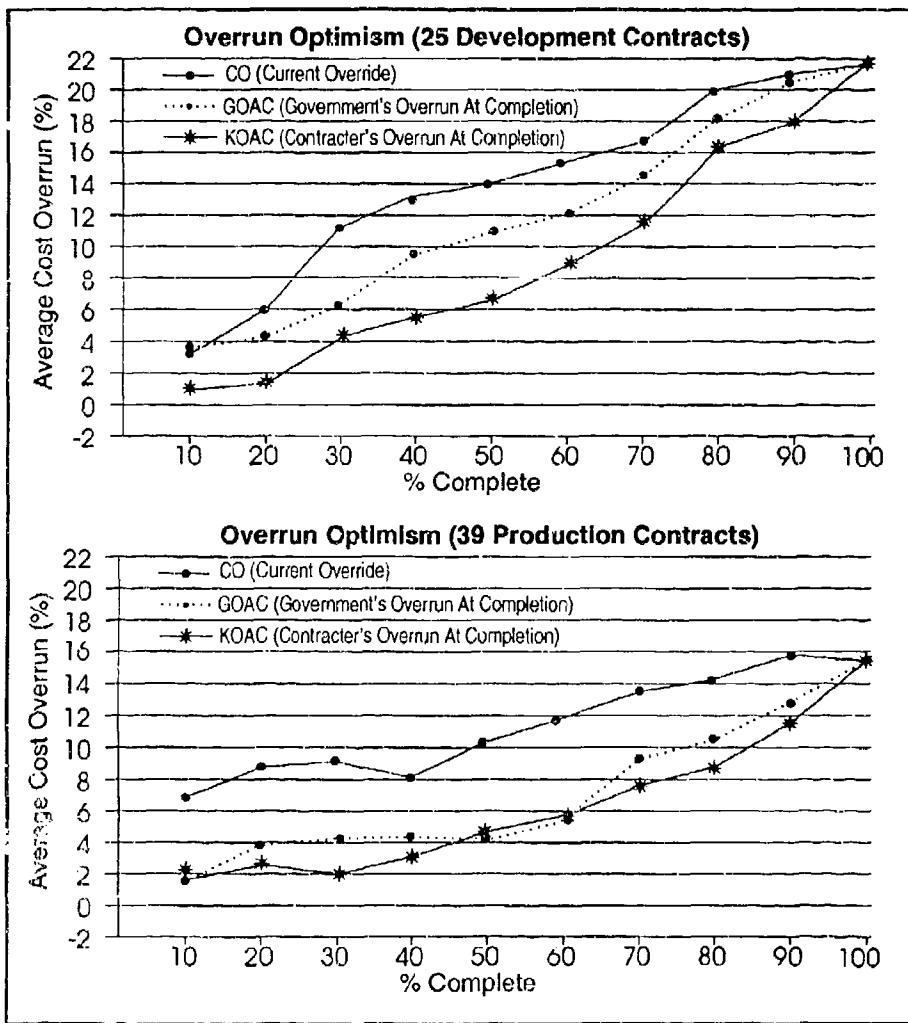
Figure 4. Average Cost Overruns by Contract Phase.
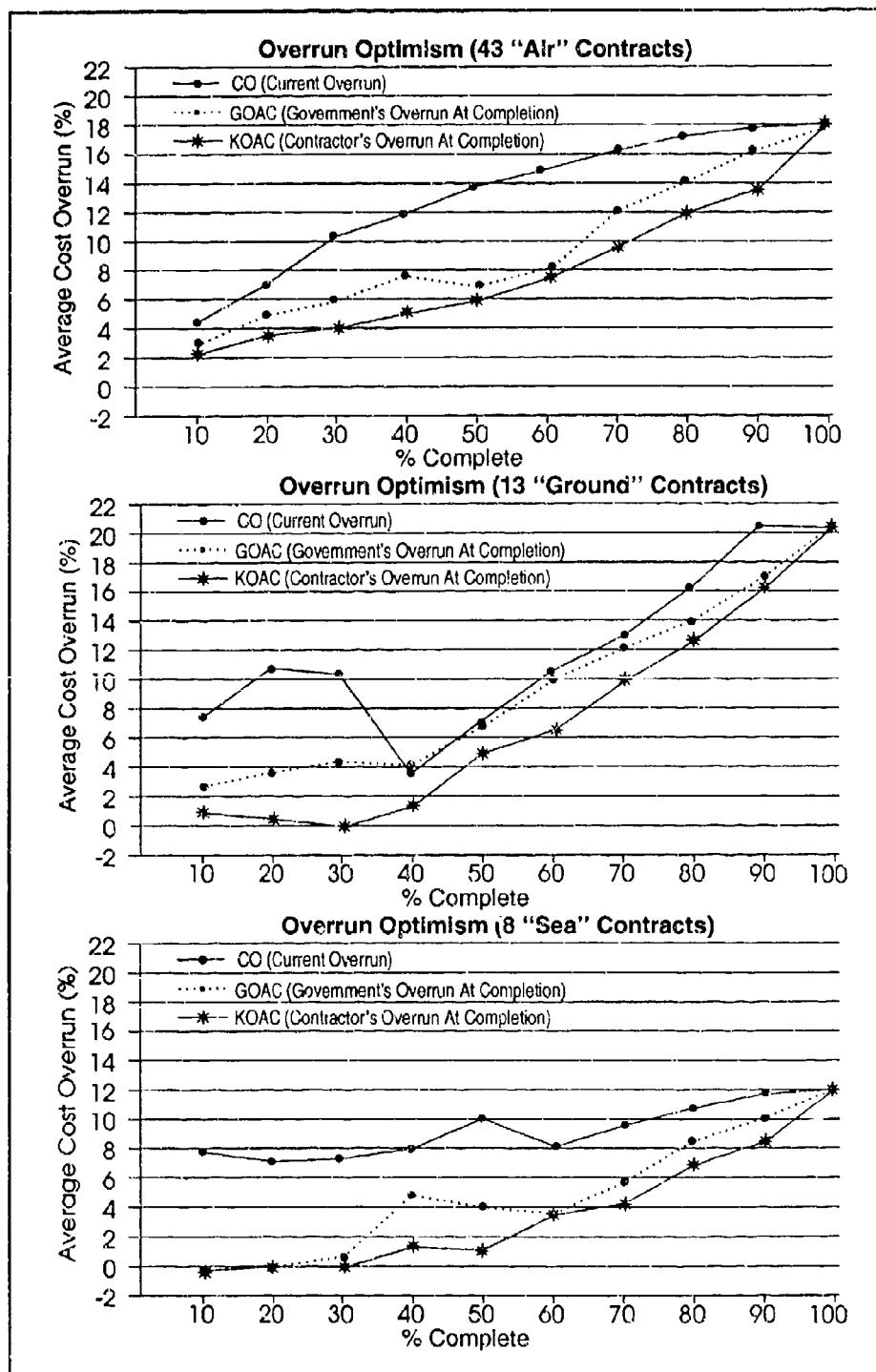
Figure 5. **Average Cost Overruns by Type of Weapon System.**
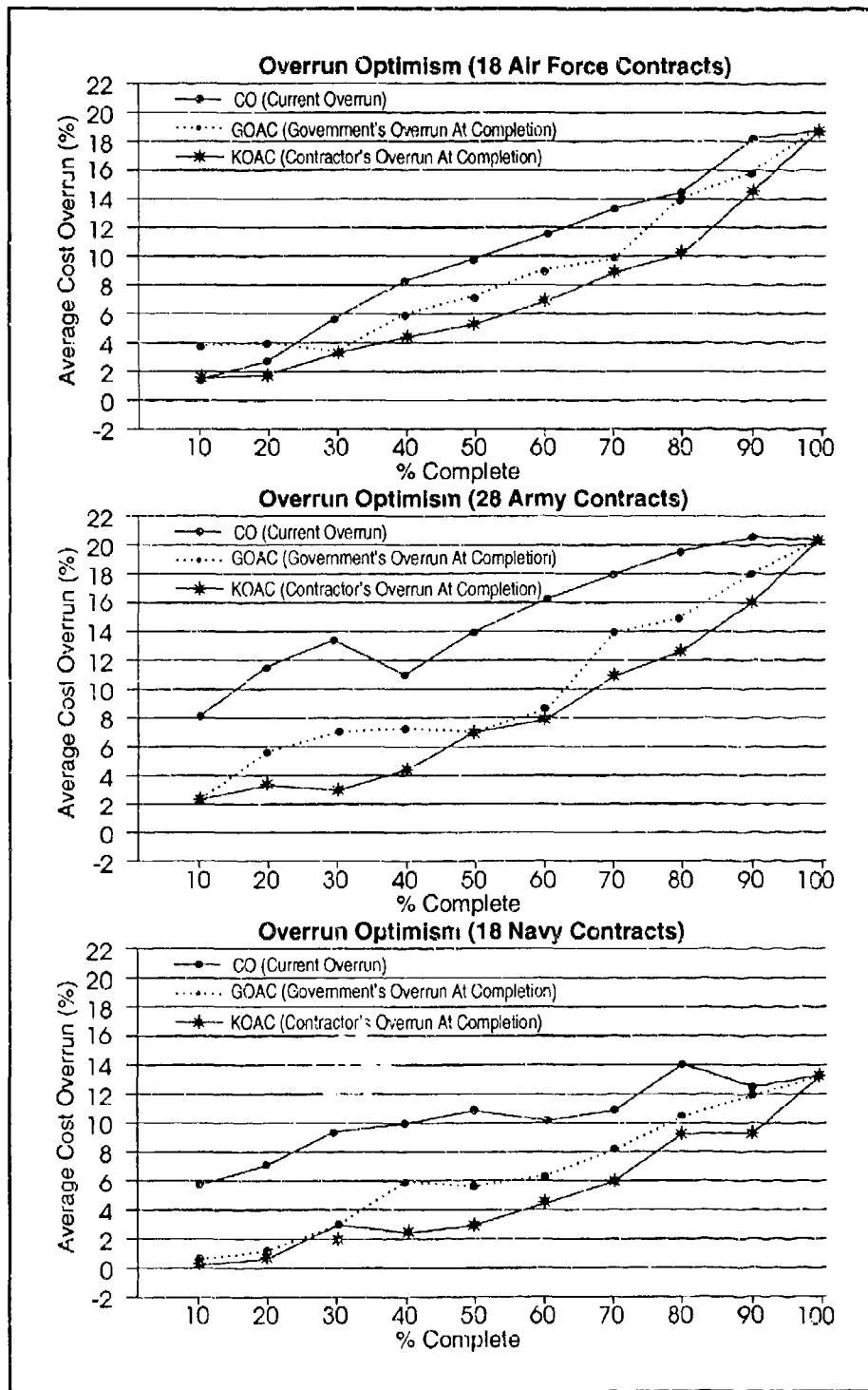
Figure 6. **Average Cost Overruns by Managing Service.**

REFERENCES

Abba, W. (1992, September). [Interview at the Office of the Under Secretary of Defense (Acquisition), Washington, DC].

Beach, C. P., Jr. (1990, November 28). *A-12 Administrative Inquiry* [Report to the Secretary of the Navy]. Washington, DC: Department of the Navy.

Campbell, D. G., & Fleming, Q. W. (1991, January 17). *The A-12 Program Management Summary.* Paper presented by Wayne Abba at NSIA/MSS meeting, Los Angeles, CA.

Christensen, D. S. (1989, Fall). Management Control Systems Theory and Cost/schedule Control Systems Criteria. *National Estimator*, 29-34.

Christensen, D.S., & Payne, K. (1992, April). Cost Performance Index Stability— Fact Or Fiction? *Journal of Parametrics, 10*, 27-40.

Christle, G. L. (1981, Spring). Automation of Program-Project Cost Reports Within DOD. *National Estimator, 1*, 22-27.

Department of the Air Force. (1987, October). *Cost/Schedule Control Systems Criteria Joint Implementation Guide* (Air Force Systems Command Pamphlet 173-5). Washington, DC: Headquarters Air Force Systems Command.

Department of the Air Force. (1989, September). *Guide to Analysis of Contractor Cost Data* (Air Force Systems Command Pamphlet 173-4). Washington, DC: Headquarters Air Force Systems Command.

Department of Defense (1991, February 23). *Defense Acquisition Management Policies and Procedures* (Department of Defense Instruction 5000.2). Washington, DC: Department of Defense.

Ferber, M. M., & Math, P. F. (1991, April 9). A-12 Default Termination Issues. *United States General Accounting Office Testimony—joint statement before the House Armed Services Committee and Subcommittee on Investigations* (GAO/T-NSIAD-91-14). Washington, DC: General Accounting Office.

Gansler, J. S. (1989). *Affording Defense.* Cambridge, MA: The MIT Press.

Heise, S. R. (1991, September). *A Review of Cost Performance Index Stability* (AFIT/GSM/LSY/91S-12). Master's thesis, School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, OH.

Horngren, C. T., & Foster, G. (1991). *Cost Accounting, a Managerial Emphasis* (7th ed.). Englewood Cliffs, NJ.

Morrison, D. C. (1991, March). Deep-sixing the A-12. *Government Executive*, 30-35.

Welch, J. J., Jr. (Assistant Secretary of the Air Force (Acquisition)) (1991, April 8). *Program Advocacy* (Acquisition Policy Letter 91M-005). Washington, DC.

Wilson, B. D. (1991). *An Analysis of Contract Cost Overruns and Their Impacts* (AFIT/GCA/LSY/92S-8). Master's thesis, Air Force Institute of Technology, Wright-Patterson Air Force Base, OH.

Yockey, D. J. (1991, Winter). [Keynote speech of the Cost/Schedule Control Systems Criteria National Workshop held on October 28, 1991, at Falls Church, VA]. *National Estimator*, 35-38.

THROUGH A GLASS DARKLY:
THE ANOMALY OF STREAMLINED MANAGEMENT

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We noticed that the term *"streamlined management" (SM) is being used indiscriminately. We know of several systems acquisition activities that purportedly have used SM, so we asked what that meant. We found that SM is sensibly constructed as an ensemble of programmatic, organizational, managerial and human arrangements, meaning that they work only in concert. This finding matches leading-edge management theory, but represents an anomaly to program managers (PMs) because it violates the conventional paradigm of piecemeal improvement.*

From the fundament of the defense management review to the hoopla of total quality management, the DOD mandate is efficiency. Many published discussions on this issue mention SM: Often lauded (Amouyal, 1990), though occasionally lambasted (Bond, 1990), the label is applied indiscriminately; that is, it is used either to mean whatever the author (or reporter) says it means (Hardesty, 1985), as a self-evident term (Betti, 1991), or as a rubric for any and all techniques that are intended to increase organizational efficiency by paring layers of management (Morocco & Bond, 1990). If this sort of ambiguity seems inconsequential, don't shop for a "mouse."

We noticed this situation and were bemused because we have been assigned to, or consulted for, several DOD program management organizations that use SM. We decided to investigate what SM means to users and contribute our findings to the program management community. We want our research to clarify, not further confuse, the issue. We do not use our data to construct yet

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another definition of SM; rather, we reconcile our findings with management theory, to evaluate what works.

METHOD

We felt our inquiry would yield the most valid results if we gathered data from multiple, open-ended interviews in organizations with which we are familiar. The conclusion is based on a sophisticated body of knowledge about the design of sociological research in organizational settings — our target. Considerations range from the fundamental (nature of reality) to the pragmatic (obtaining valid information). We want to convince you that our method is valid but not baffle you with the argot of research design.

It's important to realize that SM is a label, but not what is labeled. Labels provide convenience in a complicated world only if there is reasonable consensus about that to which they refer; otherwise, there is ambiguity as with SM.

Streamlined management is a set of ideas independent of our comprehension. The reality of SM is that it is what we understand it to be.

There are grounds to reject the assumptions that researchers can operate as independent observers and formulate standard questions for research subjects from which unbiased, statistical inferences can be drawn. Instead, it is the collaboration of researchers and subjects in mutual exploration of the topic, that yields understanding (Burrell & Morgan, 1979). Rather than use standard questions in our inquiry, we painstakingly constructed the meaning of SM in each organization from the copious notes we took in extended interviews with members. We discovered unsolicited themes and recurring idea sets that were volunteered by participants about SM. Rather than stand back from the data, we immersed ourselves in it, until we were convinced that we had captured the social reality to which the label SM was applied in that organization.

The several organizations we researched were conducting DOD program management activities, to which either or both of us had been assigned or for which we had consulted. In each case SM was an acknowledged part of organizational reality. We guaranteed organizational and personal anonymity to preclude qualms about propriety.

We interviewed some members of each organization, except one. We stratified our interviews vertically and horizontally; that is, we interviewed members from the top to the bottom of the organizational hierarchy, and across the range of program management functions. At the excepted organization, access considerations limited our interviewing one member — a highly-experienced PM. In every organization, we interviewed either a military general officer or a civilian senior executive service member.

Before the interviews, we could not know whether there would be a high consensus about SM within each organization. Further, we had no basis to predict if the respective organizational realities about SM would coincide. While the organizations are independent in hierarchy and mission, they are also

citizens of a program management community in which people and wisdom are transferred.

After the interviews, we reconstructed SM in each organization and considered the realities in relation to each other. To do this, we used the simplest dialectic model of analysis complemented by synthesis. For the analysis, we built a set of categories to provide conceptual clarity. For the synthesis, or putting back together, we built linkages showing how idea sets related to each other. Finally, we compared our findings to management theory to suggest implications. This may seem opposed to the usual order of scientific inquiry where theory is the basis for hypotheses, which are then strictly tested. In this case, however, rather than allowing theory to impose a structure on the data, we enabled the data to compose whatever reality was there.

To recap our method in program management jargon, we did an analysis and synthesis of SM at a "grass roots" level, using a method designed to capture the richness and variety of actual thinking in the field rather than the pseudo precision of a standard instrument. We do not pretend our findings about SM are definitive or exhaustive; rather, we intend that our results supplement the "parametric" approaches to SM being undertaken by others and whereby SM policies are directly designed and implemented.

FINDINGS

Naturally, the precise details of SM differed from one organization to another depending on circumstances: but we found conceptual congruity about SM in our population.

To clarify the elements of SM that we dis overed, we constructed a classification scheme *post hoc*; that is, the categories were not inherent in the data but were created by us to suit that data. They are:

Programmatic -— streamlining acquisition processes
Organizational — streamlining organization systems
Managerial -— streamlining managerial roles
Human — streamlining individual performances

Our scheme is a loose empirical taxonomy of streamlined management that descends from the more general (programmatic) to more particular (human) practices. However, our only purpose in assigning a specific finding to a category is to partition variety for illumination. Therefore, if you believe a certain issue belongs elsewhere, be assured the difference does not affect our conclusions. In the next paragraphs, we present our analysis—the pieces of SM that we found. For brevity, they are distilled, but in our opinion, they accurately summarize the actual pr ctice of SM in these organizations.

PROGRAMMATIC ELEMENTS

Everyone we interviewed reported that SM minimizes reviews and oversight, especially by external agents. While this seems obvious by definition, the focus of their experience was on the lack of value added. They acknowledged the need for programmatic checks and balances; but, in their opinions, the many "what-if" requests, special reports and additional audits demanded by outsiders, primarily congressional staffers, contributed nothing to the success of the program while raising costs and slipping schedules. They surmised that the ever-increasing volume of review and oversight is caused by burgeoning congressional staffs and increasing legislation designed to regulate past problems. One organization virtually tripled in personnel size during a 5-year period, primarily to cope with expanding review and oversight requirements!

Stable requirements were seen as indispensable to SM. In dynamic threat, high-technology program environments, it is acknowledged that some requirements drift is inevitable; but SM practitioners emphasized caution in tailoring requirements to program needs and ensuring that everyone, from designer to user, has a common understanding of them.

From a programmatic vantage, SM means establishing firm requirements and not allowing external reviews and oversight to impede the program process.

ORGANIZATIONAL ELEMENTS

Two recurring themes in streamlining the acquisition organizations we investigated were the buffering of personnel and a flat hierarchy. Again, these are neither surprising nor mysterious. Buffering refers to designing the organization so program operators are relatively insulated from the inquiries and demands of external agents as discussed above. Creating tight-knit working teams around a program element function or a problem is more than just a productive human resource arrangement; it also minimizes the number of interfaces that drive requirements changes.

We can't improve on the definition of hierarchy given by a person we interviewed: ". . . it's the number of wickets you have to go through to get to the top." A common feature of all the SM organizations investigated was a short chain of command and direct lines of communication, designed to avoid briefing any level that can't give approval but can direct change. One organization that transitioned from SM to an orthodox acquisition environment experienced an increase in briefing cycle from 3 days to 3 weeks, and an increase in funding authority cycle from hours to literally more than a year!

A third organizational element of SM mentioned by a senior PM is more an organization mentality than a structure. Streamlined management works where program organizations are understood to be mission executing, not staff, with the PM as commander in chief, not chief of staff. By analogy, contrast the conduct of Desert Storm with the aborted rescue attempt of the Iranian hostages. In each case, of the ability of the on-scene manager to conduct the mission

unencumbered by laborious organization channels was construed as vital to success.

From an organization vantage, SM means a hierarchy with only the review levels germane to decision making. It is organized to shield program operators from outside intrusions, and designed to achieve the program mission, not act as a staff to be tasked intermittently by higher authority.

MANAGERIAL ELEMENTS

Considering the "M" in SM, our research uncovered two major implications for the role of managers: the importance of trust and an impetus toward action. Interviewees emphasized that, for SM to work, relationships must be bonded by trust. In particular, they cited the relationship between government and contractor, where a sense of community and team spirit must be fostered. Of course, this also could be construed as the military-industrial complex that has been criticized in the past; but it is the relationship that predominates in the SM organizations studied.

Trust enables a bias to action. Those interviewed agreed that more money is typically wasted by deliberating day-to-day decisions in a conventional program management mode than by making timely decisions, even if sub optimum, in an SM mode.

From a managerial vantage, SM means trust and action. Both are counter to the conventional image of an arms-length or even mildly adversarial relationship between government and contractor, with operating decisions subject to approvals by higher authority. But, both were reported as indispensable by those who practice SM.

HUMAN ELEMENTS

We use this category for those parts of SM that pertain to individuals operating the program, including the importance of taking risks, the necessity for individual accountability and the value of experience. Certainly, hiring capable people and allowing them to take risks while holding them accountable is a paradigm of good (if perhaps utopian) management. Nevertheless, interviewees unanimously viewed these conditions as specifically instrumental to SM. They pointed out that risk cuts both ways; that is, individuals must be encouraged to take risks in pursuit of program goals. At the same time, organizations must be prepared to risk absorbing the reasonable costs of those individual risks in consideration of the payoff in human capital investment.

Risk is tempered by accountability. Those interviewed emphasized that for SM to work, "everyone must know who's sinking, swimming, or treading water. There's nowhere to run or hide."

Interviewees confirmed that getting and keeping experienced people is vital but can be a stickler. One senior PM borrowed the term "burn-in" from electronics to describe the process whereby he subjects people to a diversity of

program responsibilities in quick succession to enhance their ability to evaluate the impact of various factors of the program.

From a human vantage, SM means people who know how to do the job, are willing to act independently, and are prepared to accept responsibility for those actions.

SYNTHESIS

We suspect these findings of the common elements of SM will come as no surprise to the acquisition establishment, though it is still useful to have them confirmed. What is interesting is the virtually unanimous view that it is as much the integration of these elements that matters as the elements themselves. Often throughout our inquiry, we were told that the crux of SM is not just paring levels of review, empowering risk-taking, etc., as mentioned above, but, more importantly, that all of these things work together. This finding is at once intuitively obvious yet deeply insightful. It is, however, also superficial until we can derive its practicality for program management. To do so, we shall anchor it in management theory and then consider its implications.

THEORY

Let's start with a root idea — complexity, which can be thought of as the product of the number and diversity of factors that apply in a management situation, is compounded by ambiguity, the degree of clarity in the identity of each factor. This, in return, is compounded by uncertainty (the probability that each factor will be in any one of all its possible states) and by change (the rate at which all of the above becomes different over time). Even if these factors combined algebraically (factors X ambiguity X uncertainty X change), they quickly become overwhelming. In fact, they proliferate exponentially (factors raised to the power of ambiguity raised to the power of uncertainty raised to the power of change), making sheer complexity the focal problem of modern management. In turn, SM comes into focus as a way of managing the high complexity inherent in systems program management.

Historically, management theory has treated complexity by attenuating it, reducing the number of factors by importance, ignoring ambiguity by assumption, resolving uncertainty by worst–case or expected value, and holding the situation constant (no change) for linear cause-and-effect analyses. This has not made management optimum, but it has made it possible. Many of the SM elements that we found are in this tradition: reducing the number of factors (limited oversight), holding situations constant (requirements stability), etc. This is the conventional wisdom about streamlining management by simplification.

Leading-edge management theories, however, take a new tack in the sea of complexity, asserting that complexity can be managed in its own right. The concept is integration, but it is important to understand that we do not mean

everyone communicating with everyone. Rather, we are invoking recognition of the management situation as a complex system, with attributes that cannot be explained by reference to its elements alone, and integration as the understanding of that whole. There are two levels to this understanding.

The first is systematic: building a set of viable relationships among the elements, so they combine purposefully. We found evidence that SM is being realized at this level. For example, our data suggest a systematic link in SM organizations between hierarchy and trust. A high level of trust allows the streamlined organization to be sparse, with few levels; simultaneously, having a lean organization necessarily enhances trust, because with so few people the program can't get done any other way. Thus, these elements of SM work together. A similar link exists between the organizational strategy of buffering and the human element of experience. Experienced people need to be buffered to be effective; at the same time, a buffered program organization core must contain experienced people.

The second level of integration is systemic: building a model that captures the pattern, or metalogic, of a management situation; that is, the logic embedded in the system of relationships, but not an exhaustive specification of all relationships. Here, our evidence is historical. Consider that the heritage of SM in program management is the so-called "skunk-works" programs. Surely in legend, and we think substantially in fact, these were small, swift management systems that coped successfully with highly complex acquisition challenges — the ultimate in SM. Our conjecture is that, in addition to ruthless streamlining, these systems succeeded because true systemic integration happened. It happened in the head of the PM. The human brain is not the best storage space for pieces of information, and it is not the best mathematical calculator. It is still far and away the best complexity integrator and pattern recognizer ever known. The exciting prospect for management knowledge is that we are beginning to understand how the brain does that and beginning to have the information processes to replicate it (Wilber, 1992). In SM history, it appears that the direct descendants of the skunk-works managers carried down not only the pieces of streamlining, but some vestige of its totality. They articulate their understanding of SM integration at the systematic level. Our belief, however, is that it has derived from a true systemic origin. As programs spawned at skunk-works expanded in scope, the PM as integrator was no longer feasible. Streamlined management procedures were kept; and, in those instances where integration of at least the systematic kind was retained, SM is still considered viable. In other cases, SM is still present in pieces: but integration is gone. There is frustration, and a vague longing for "the good old days when you could get things done around here."

Our dialectical research loop is closed, then, with the synthesis of theory and findings. Streamlined management is being practiced in certain acquisition settings, and it means practically the same thing in every one. It means

programmatic, organizational, managerial and human arrangements; but, more importantly, it means integrating them, either by painstakingly building from scratch and then maintaining their relationships, or by understanding and controlling their overall logic. This reconciles with emerging management theory, that posits complexity as the metric and constructs information-based models to cope with complexity instead of quashing it.

IMPLICATIONS

We see two major implications in our findings; taken together they are optimistic but drastic. The optimism arises from the first implication that SM, when understood to mean robust integration as well as just, discreet practices, is not a skunk-works artifact, but may be useful in a broad range of acquisition situations. The second implication, however, is that achieving integration cannot be done on the margin; typically, it demands system reformation, which is drastic.

Thus, the two allusions of our title. "Through a Glass Darkly" is an excerpt from the Christian Bible, I Corinthians, Chapter 13. The pertinent verses are: "For we know in part, and we prophesy in part ... no' we see through a glass darkly; but then face to face." (Bible, KJV) We use it to convey the essence of our finding — SM is something that, through our research we have come to know, in part, and yet can only predict or prophesy, in part. Further, we think others instinctively share our view without having conducted an inquiry. We all know intuitively that integrating management elements is more important than the elements yet, we can only predict it; we can't necessarily make it happen when we want it to.

The second allusion is why. The tacit recognition of the need for SM integration by way of system reform is still an anomaly in program management. By anomaly, we mean something that perturbs our paradigm (Kuhn,1970), or the most fundamental premises order our reality and can be resolved only by formulating a new paradigm. In this case, our data implies that, to achieve even the more modest systematic level of integration, significant changes might be required in not only the programmatic and organizational regimes of program management, but in the managerial and human ones to achieve the requisite totality of arrangements. For example, acquisition career development patterns might have to be built from scratch, cutting across customary military and civilian career–pattern constraints to achieve burn–in; managerial discretion might need to exceed the boundaries normally allowed in the public domain to achieve adaptive capacity, etc. Painfully apparent in complex situations like program management is that the system linkages extend well beyond the reach of program authorities. It is no exaggeration that major defense program acquisition systems include the Congress, for example; yet no one in the normally defined program management structure can exercise control over that reality. In the Air Force, it is generally acknowledged that implementation of

the program executive officer concept has not supplanted the previous chain of coordination, command and control, but has created an additional one — hardly the intended streamlining. Again, no PM can ignore or alter that reality.

The anomaly persists, then, not because those in the program management hierarchy lack will or even acumen but because they can't "get there from here." "Here" is an acquisition system where change is introduced on the margin, through new initiatives and programs; there is a wholly new system, or integrated total pattern of arrangements. Those who have enjoyed successful SM did not, to our knowledge, take a conventional program management system and streamline it piece-by-piece; and, in our opinion, are not smarter and don't work harder. Rather, they are situated in a program management context that, either by special program lineage or by built-from-scratch, achieved and maintained a streamlined system.

We expect some might see total quality management (TQM) as the remedy. While some concepts usually packaged under the TQM label, like attention to process, have underlying system properties, we are cautious about jumping on the TQM bandwagon. This is partly because it is being purveyed akin to a religion (with prophets, converts and heretics, requiring a profession of faith) but mainly because some aspects of the TQM faith lack a valid theoretical and empirical foundation. For example, a leading tenet of TQM is to transform the organization's culture. That is oxymoronic; culture, by definition, is a deep reality that emerges from within the social milieu, not a variable under management purview. To prescribe a culture change from the TQM pharmacy is management quackery.

Similarly, reorganization and other initiatives emanating from the defense management review, however bold and far-reaching, are unlikely to affect a streamlined process insofar as the revised features are not in concert with the residual features.

Unfortunately, we have no panacean prescription. True system reformations are rare, but we conclude from our SM findings that, for major acquisition programs to exploit the full advantages actually achieved via SM, such a face-to-face reformation would be required. Lacking that, SM will remain a tantalizing vision seen through a glass darkly.

REFERENCES

Amouyal, (1990, April) Streamlined Management Said Key to F-117A, *Air Force Times,* 26.

Bond, D. F. (1990, December) A-12 Lesson: 'Secrecy, Efficiency' Cloud Oversight and Conceal Mistakes, *Aviation Week & Space Technology,* 20-21.

Hardesty, B. A. (1985, January-February) The Streamlining Initiative: Removing Barriers to Productivity, *Program Manager,* 6-9.

Betti, J. A. (1991, January-February) A Resignation in DOD, *Program Manager,* 2-3.

Morrocco, J. D. and Bond, D. F. (1990, January) Defense Department. Streamlines Management, Sees $39-Billion Savings Through 1995, *Aviation Week & Space Technology,* 19.

Burrel, I. G. and Morgan, G. *(1979) Sociological Paradigms and Organizational Analysis,* London, Heinemann Educational Books.

Wilber, K., (Ed.), (1982) *The Holographic Paradigm and Other Paradoxes,* London, Shambhala .

The Holy Bible, (1953) authorized King James Version, New York, Collins' Clear-Type Press, 170.

Kuhn, T. S. (1970) *The Structure of Scientific Revolutions,* (2nd ed.) University of Chicago Press, Chicago.

MOBILIZING THE DEFENSE CONTRACTING PROCESS

Robert G. Morrison, Jr.

C ongress is not shy about using the Department of Defense (DOD) acquisition process to promote interests other than providing our military forces with the best equipment, when and where needed, at the lowest overall cost to the taxpayer. Most of the laws are intended to protect the taxpayers or to achieve broader social goals. An extensive network of regulations implement the laws and ensure that acquisitions reflect sound business judgment and are consistent with DOD policy.

Since many laws and regulations do not contribute directly to the primary mission of supporting the military services, they add a significant cost and administrative burden to the acquisition process. Acquisition officials should accept these burdens and recognize that those entrusted by the Constitution with determining how to allocate the defense budget to reflect the national interests, have done so.

In peacetime, seemingly unrelated laws and regulations present Department Of Defense acquisition professionals with many unique, but tolerable, challenges in their efforts to supply troops with quality goods in a timely manner.

During national emergencies, when the acquisition process impacts directly on the battlefield, delays incident to unrelated laws and regulations are not tolerable. They are not tolerable to acquisition professionals or to their primary customers — Service members who have been placed in harm's way. Nor, should they be tolerable to anyone else, even beneficiaries of the law or regulation.

Fortunately, drafters of most defense acquisition laws and regulations have

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not lost sight of the primary mission of DOD—to fight the Nation's wars. Most laws and regulations contain waiver or exemption authorities, at some level, which are intended to help refocus priorities during a national emergency.

OBJECTIVES
This article will:

1. Assess the extent to which DOD acquisition laws and regulations provide necessary leeway for acquisition professionals to accomplish their primary mission during a national emergency;

2. Examine the ability and willingness of all DOD acquisition professionals, working within the laws and regulations, to refocus priorities during a national emergency situation such as Operation Desert Shield/Storm (ODS); and,

3. Recommend appropriate legislative, regulatory and policy changes to ensure that during a national emergency, all ancillary interests imbedded in the defense acquisition process take a back seat to the primary objective of supporting the troops.

TERMINOLOGY
Acquisition has been used in some contexts to include a broad array of activities from the drafting of requirements, and including every action along the way, stopping just short of the user. Here, only the contracting aspects of acquisition will be reviewed — actions taken by contracting personnel from the receipt of a purchase request to the moment the government enters into a legally binding agreement Federal Acquisition Regulation for the goods or services required.

Mobilization as used herein, refers to the process of directing resources toward resolution of a crisis or emergency situation. This use is more consistent with the concept of Graduated Mobilization Response (GMR) (Department of Defense, 1993) than the traditional use of mobilization to designate specific events or classes of actions (Clem, 1983).

SCOPE
This article reviews all federal contracting actions necessary to support crisis management and early national emergency stages of a mobilization (Department of Defense, 1993). Actions taken by DOD and civilian contracting offices inside and outside the Continental United States (CONUS), including those in the theater of operations, are within the scope of this review.

My intent is not to argue the peacetime merits of the intended outcomes of the myriad laws which control the federal acquisition process. Using the defense

budget to accomplish indirectly related societal goals is a fact of life. If Congress decides to relieve DOD of all acquisition laws except those necessary to ensure that tax dollars are spent honestly and efficiently to support the defense mission, it will be a greater surprise to many than the collapse of the Soviet Union.

WHY FOCUS ON CONTRACTING?

When viewed in the grand scheme of laws, regulations, capital equipment, personnel, training, production capacity, etc., necessary to mobilize, a discussion limited to contracting must be recognized as narrow, but critical. Clearly, even the most efficient contracting process will not, standing alone, provide for an effective mobilization. It makes little sense to have the ability to expedite contracts if there are no providers of the goods and services required. It would make less sense to contract for equipment we did not have the capacity to transport to the theater of operations, or, trained personnel to use the equipment once it arrived. Likewise, the effectiveness of all other elements of mobilization is diminished if the contracting process does not allow us to take full advantage of our capability.

In developing a national strategy to meet future mobilization requirements, we face many difficult decisions.

1. How large should the military force be? What percentage of the force should be active duty, reserve, etc.? How should they be trained?

2. Where will we obtain the weapons and equipment to fight future wars? Should we stockpile equipment? Should we continue to prototype weapons systems without actually going into production? Should we rely on slow, uneconomical production rates to keep the production base warm? Should the government intervene in the marketplace to ensure that critical capabilities survive? Should we encourage arms exports to ease the burden of maintaining the industrial base?

3. How will we transport troops and equipment to the theater of operations? Should we build more cargo ships and transport planes? Should we subsidize U.S.-flag vessels and the air transport industry during peacetime to ensure their availability in support of mobilization?

As a nation we probably will not be willing to make sacrifices necessary to meet every mobilization challenge on a moment's notice. The best we can hope for is that our leaders will choose a viable option that reflects a well-reasoned comprehensive defense plan. And, that any political decision to engage in a military situation is consistent with our ability to mobilize and meet that challenge. Even with our best efforts, history tells us we will get caught short in some element necessary to mobilize effectively.[1] To paraphrase a line from

the movie *Body Heat* - "There are 50 ways to screw up a perfect mobilization plan. A genius can think of 35. We're not geniuses."[2]

The good thing about focusing on the contracting element of mobilization is that we have significant opportunities for improvement. If implemented properly, changes to the process add nothing to the peacetime budget, and do not sacrifice peacetime socioeconomic objectives. If the contracting portion of the mobilization puzzle is *fixed*, addressing the 49 less-controllable elements of mobilization will be easier.

HISTORY

In the United States, contracting under a state of mobilization preceded contracting during peacetime. In fact, mobilization contracting preceded the birth of the Nation. In June 1775, when the Second Continental Congress took control of the Army and appointed a Commissary-General to acquire supplies (Culver, 1984), there was no time to pass hundreds of acquisition laws, and generate 30,000 pages of acquisition regulations.

Over the century and a half following the Revolutionary War, acquisition law grew slowly and sporadically. Some laws were enacted or adjusted during the Civil War and World War I (WWI) to facilitate mobilization; other laws were passed after the wars as a result of lessons learned (Culver, 1984). Occasionally, laws were passed during peacetime to ensure the integrity of the acquisition process and for various social causes (Culver, 1984). The Great Depression of the 1930s brought the first concentrated effort to use the federal acquisition process to further social and economic goals such as the Walsh-Healey Public Contracts Act, the Buy American Act, and the Davis-Bacon Act.

With the advent of World War II (WWII), emphasis in legislating the federal acquisition process shifted back to war fighting and mobilization concerns. In 1940, several laws were passed to facilitate expeditious production of defense equipment (Culver, 1984). Eleven days after the Japanese attack on Pearl Harbor, the President signed the first War Powers Act and eliminated much of the administrative baggage that had been legislated into the federal acquisition process. Executive Order 9001 rounded the edges off the War Powers Act and designated authorities necessary to implement it. Within 20 days of the onset of war, the government was able to enact enough emergency authority to support the greatest mobilization in the history of mankind.

One of the lessons learned from WWII was that peacetime acquisition laws

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1 Even during Operation Desert Storm (ODS), when we were arguably better prepared to mobilize than for any emergency in the past, the six months prior to the beginning of the ground war were necessary to allow time to work out some of the bugs associated with being prepared to fight in a forest and not in a desert (e.g., uniforms, sandbags, boots, tank paint all needed to be "fixed" prior to engagement).

2 The scene in the referenced movie pertained to the planning and execution of the perfect murder.

and regulations were not flexible enough to accommodate emergency situations. To remedy this situation, one body of law was created to apply to all defense contracting under any circumstance.[3] This law, the Armed Services Procurement Act of 1947, was implemented via the Armed Services Procurement Regulation (ASPR) in 1949. For civilian agency acquisitions, the Federal Property and Administrative Services Act of 1947, and the Federal Procurement Regulation (FPR) in 1959 (Culver, 1984) served the same purpose.

THE ASPR

The ASPR was significant because it provided DOD acquisition professionals and their leaders a mechanism to meet many mobilization challenges without resorting to legislation.

In 1976, the ASPR became the Defense Acquisition Regulation (DAR). In 1984, pursuant to Section 6 of the Office of Federal Procurement Policy Act (41 U.S.C. 405) the DAR and the FPR were combined into the FAR. In DOD, the FAR is supplemented by the Defense FAR Supplement (DFARS), lower level department and agency supplements, and supplements of those supplements (collectively referred to as the FAR System). For mobilization purposes, the FAR System at the outset of ODS (August 1990) provided acquisition professionals with essentially the same tools as the 1949 ASPR.

Since the end of WWII, the DOD acquisition process has been encumbered by a succession of laws designed to use the defense budget to achieve goals other than buying defense capability. In most cases, these laws are written to allow for waivers and exemptions during a national emergency.

LAWS AND REGULATIONS

Do acquisition laws and regulations *impede* or *facilitate* contracting during a mobilization?

The answer to both parts of this question can be Yes! Every action that does not add value to the war effort can be an impediment to mobilization. This includes contracting actions not directly related to mobilization in CONUS contracting offices where efforts expended on nonemergency acquisitions detract from the resources available to support the mobilization. Laws and regulations are impediments even when they provide for exemptions or waivers, because resources are consumed and time is lost processing the exemptions and waivers. Of course the most significant impediments come from; (1) laws from which there is no exemption or waiver, or which require approval of the waiver or exemption at an unreasonably high level; and (2) regulations which require more than the law.

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3   Independent laws like the Buy American Act and the Davis-Bacon Act were not incorporated into the Armed Services Procurement Act.

While acquisition laws and regulations are usually considered to be impediments, they can also be viewed from the perspective that they facilitate a mobilization. In a report prepared at the request of the Under Secretary of Defense (Policy), Richard Danzig (1983, p.3) stated, "... one cannot usefully speak of 'barriers' to mobilization. Instead, one ought to recognize that the law lays out roads that channel bureaucratic (and private) traffic moving over the unfamiliar terrain of a mobilization." Danzig's comment here referred generally to his findings after reviewing ten "substantive areas," including "Procurement" (i.e., "Contracting"). In the specific area of procurement, Danzig (1983, p.34) noted that the bulk of limitations did not flow from statute, but rather from the predecessors to the FAR, and from excessive centralization of approval authority. Danzig (1983, p. 35), stated that existing legislation typically permits necessary waivers and pointed out the significant emergency contracting authority available under Public Law 85-804.

In 1987, the DOD Logistics Systems Analysis Office (LSAO) completed a narrow study of acquisition policies specifically affecting procurement administrative lead time (PALT) during mobilization (Department of Defense, 1987). The study team offered 34 proposals, 23 for consideration by the Assistant Secretary of Defense for Logistics and 11 for action by DOD components. Nine of the recommendations were for statutory revision. Others recommended FAR, DFARS, or other regulatory changes. All proposals were directed at the reduction of PALT (the time necessary to turn a funded purchase request into a contract). While few of the legislative problems dealt with "show-stoppers," (laws for which there is no waiver or exemption authority short of another law or national emergency declaration), the cumulative burden of laws on the acquisition process is significant. There is no evidence that the proposals in the LSAO study were ever collectively acted upon by OSD.[4] However, some impediments were subsequently overcome or minimized,[5] and others have been added (10 U.S.C. 2326).

In summary, you can view the overwhelming majority of acquisition laws and regulations as impediments, since they do not enhance the primary mission of DOD during a mobilization. However, if you accept socioeconomic and oversight legislation as a fact of life in the DOD acquisition process, you must view the waivers and exemptions available during mobilization as facilitators.

Do DOD acquisition laws and regulations provide the leeway necessary for

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[4] The author provided Defense Logistics Agency (DLA) support for the study in 1987. The author called OSD during ODS and was advised that the recommendations had made little progress since 1987.

[5] For example, statutory relief was granted to some extent for Justification and Authority for Purchases from Foreign Governments. Also, the small purchase threshold for contracts outside the United States in support of contingency operations was authorized during ODS, and is now permanent law.

acquisition professionals to accomplish their primary mission during a mobilization? There are few laws from which there is no relief short of new legislation. In most cases, there are alternatives to the peacetime acquisition process, which the contracting officer can employ to accomplish the mission during mobilization. In a traditional mobilization or declared national emergency, extraordinary authorities such as the War Powers Act or the provisions of Public Law 85-804 can be invoked. Or, new laws may be enacted as in WWII.

However, the existence of work-around procedures and exemption authorities is of little value if the contracting officer is not aware of the authority, or is not allowed to exploit the authorities. So, even if the acquisition laws and regulations are adequate, there is no guarantee they will be employed optimally.

Danzig correctly pointed out that *most* contracting laws provide mobilization waiver or exemption authorities. He also pointed out that centralized authority and overregulation detracted from the ability of acquisition professionals to operate effectively during a mobilization. Even if regulations and personnel take full advantage of available authorities, there are *some* laws from which there is no relief. And, *every* law that adds no value to the mobilization effort represents misplaced prioritization of resources. Also, in a GMR environment, some contracting activity occurs before declaration of a national emergency or war can rescue contracting personnel with the type of sweeping authority introduced at the beginning of WWII. Finally, acquisition laws and regulations that add no value during a mobilization have continued to increase since 1983, and show no sign of letting up. Danzig's assessment was more accurate in 1983 than in 1993.

USING AVAILABLE TOOLS
How effectively did acquisition professionals use the tools available to them to fight in ODS?

Performing effectively during a mobilization requires a reprioritizatio — sacrificing peacetime goals and objectives for wartime goals and objectives. Depending on the severity and duration of the conflict, every level of government and citizenry can be involved intimately in a mobilization. For a mobilization such as the air strike on Libya in 1986, participation was limited largely to a handful of military personnel and executive branch officials. During a declared war, on the other hand, drastic measures such as commodity rationing, selective service, and internment of entire segments of the population have been implemented. How much of a mobilization we are in is a matter that should be decided at the highest levels of Government. For domestic political reasons, or international coalition-building or power projection considerations, our leaders have been reluctant to use terms associated with a level of mobilization. There have been no declared wars since WWII, and only limited national emergency authority (not acquisition related) was invoked during ODS.

When there is no declared level of emergency, acquisition professionals are

challenged to assign priorities on their own. All decisions of contracting officers and their superiors play a large role in determining the extent of peacetime/wartime trade-offs we are willing to make as a Nation. Every time an acquisition official uses a waiver or exemption to dislodge peacetime policy, the scope of the mobilization effort is more precisely defined.

During ODS there is evidence that the overwhelming policy decision by contracting officers was that since our troops had been committed to the battlefield, we were at war. Accordingly, contracting officers and supporting personnel at contracting activities called every tool available into play to support ODS requirements (Killen & Wilson, 1992). To the extent contracting officers could trade off peacetime policies and objectives to support mobilization objectives, they did. When contracting officers lacked authority to reprioritize the accomplishment of conflicting national objectives, they requested support from the higher echelons of their organizations. This response is not surprising. To the contracting officer, reprioritization means taking whatever action is necessary, on each contract, to enhance the chances of success in the emerging conflict.

Support at levels above the contracting officer was not as uniformly in favor of "pulling out all the stops" as were contracting officers. In a headquarters/field activity relationship, disagreements over autonomy and oversight are not uncommon. From agency to agency, and sometimes between components within the same agency, there were significant differences in what officials were willing to waive or exempt (Killen & Wilson, 1992). Some agencies undertook comprehensive up-front efforts to provide blanket ODS waivers where appropriate, and to lower review and approval levels.

Other agencies were less forthcoming with the kind of help field activities needed to ease the burden of supporting ODS. Therefore, within the existing laws and regulations, the package of tools available to contracting officers varied. The reason for the variance is difficult to ascertain. It may have been that an honest evaluation of the circumstances led reasonable people to different conclusions about how requirements could be met without extraordinary procedures. Or, perhaps the difference was in a misplaced view of a headquarters as an overseer instead of a facilitator. Whatever the reason, some headquarters activities retained more authority to reprioritize national objectives during the mobilization than did others.

In addition to reviewing how acquisition officials used the tools available to them during ODS, it is appropriate to review attempts to secure additional contracting tools — requests for statutory relief. With the support of the military departments and the Defense Logistics Agency (DLA), OSD compiled a list of acquisition laws that could be impediments to the efficient execution of ODS.[6]

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6   The author was the DLA representative. The process action team that met was the same group that

The list relied heavily on field input based on current experience and "laundry lists" of proposals generated in previous years, such as the LSAO study. The OSD legislative proposals were sent informally to Capitol Hill on January 18, 1991 (shortly after the onset of the air war) (Federal Contracts Report, 1991). No action was taken on the informal package, and OSD never did submit formal legislative proposals for ODS.[7] In the way of legislation, the only new tool made available was an increase to $100,000 in the threshold for small purchases, but only for purchases outside the United States in support of ODS (Public Law 101-510). This authority was a significant timesaver to contracting officers located outside the United States. (Blyther, 1991).

Some contracting offices experienced an initial practical problem associated with the special waivers, exemptions and authorities. The rules for contracting during a mobilization are spread throughout the FAR system. There is no place a contracting officer can find a summary of all available tools. The lack of such guidance was cited as having created some problems during ODS.

ODS LESSONS LEARNED

Lessons learned from any war must be viewed with recognition that the circumstances of that war were unique. Our ability to fight the next war may be tested within an entirely different set of parameters. Many significant aspects of ODS may distinguish it from all future wars and thereby skew our perception of how well prepared we are for future conflicts. Among the significant features from a contracting perspective were — the amount of time prior to military engagement; the relatively short duration of the conflict; the ability and willingness of the host nation to provide significant support; and, the cooperation of contractors, whether due to patriotism, the popularity of the war, or the opportunity to secure additional defense contracts.

The significant contracting lessons from ODS are summarized as—

Legislative

Through the years acquisition law has digressed further and further from the fundamental mission of DOD. The digression has been caused by the addition of hundreds of laws that impact the DOD contracting process. To some extent, each law detracts from DOD ability to function efficiently or effectively during a mobilization. There is a belief among some on Capitol Hill that the authority in existing law is sufficient to support a mobilization. Empirical evidence may

met yearly to develop legislative proposals for consideration by the Director, Defense Procurement.

7 A formal legislative package represents the coordinated position of the Executive Branch and must be submitted through the Office of Management and Budget. The war ended before the failure of this effort caused significant problems.

be requested to support legislative change. A significant overreaching lesson to be learned from ODS was that no emergency declaration was invoked to provide sweeping relief from peacetime acquisition policies. Piecemeal legislation based on empirical evidence may require mission failure prior to receiving congressional support. Easing the burden on contracting offices was not sufficient justification for legislative relief during ODS.

To better understand the legislative impediments encountered during ODS, the laws are categorized according to the severity of the impediment as follows:

Potential "Show-Stoppers"

As mentioned earlier there are relatively few laws in this category. These are laws which could result in the inability to award a contract without statutory relief. Among the laws identified as problems during ODS were:

1. provisions of the Small Business Act that required determinations of nonresponsibility to be referred to the Small Business Administration for Certificates of Competency (CoC), and that small business subcontracting plans be negotiated prior to the award of a contract;[8]

2. the length of time and amount of expenditure allowed prior to definitization of an undefinitized contractual action (UCA);[9] and,

3. the requirement for compliance with cost accounting standards (CAS).[10]

Laws in this category give acquisition professionals no leeway to reprioritize workload or resources when converting from peacetime to mobilization.

The specific lesson learned during ODS was that no action is likely to be taken to remove these impediments unless DOD can demonstrate problems directly related to the legislation. Because the buildup time was so long, and the actual war so short, demonstrating the adverse impact of these laws during the war would have been difficult. For example, the statutory requirement to

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8 Sec. 8(b)(7)(A) of the Act gives the Small Business Administration the authority to overturn a contracting officer's determination that a small business is not responsible to perform a particular contract. The referral and appeal process can take up to 60 days. Section 8(d) of the Act applies to most contracts over $500,000.

9 10 U.S.C. 2326 requires definitization within 180 days of the date of the contracting action. The period for definitization can be extended to 180 days after receipt of a qualifying proposal, but no longer. Expenditures are limited to 50 percent of the total "not-to-exceed" price (increases to 75 percent after receipt of qualifying proposal).

10 Public Law 91-379, as implemented in Part 30 of the FAR allows for many exemptions to the CAS requirement. Still, there are situations where no exemption is authorized.

definitize the first ODS UCAs within 180 days of receipt of a qualifying proposal was just beginning to be a problem when the war ended. Delays inherent in the CoC process will always be difficult to demonstrate because the contracting officer always has the unsavory alternative of accepting, without appeal, a CoC.[11] The requirement for a negotiated small business subcontracting plan can be met easily, if the government is desperate to fill a wartime requirement.

Direct Administrative Burdens

Acquisition laws which allow for exemptions and waivers under certain conditions, at predetermined levels, are included in this category. These laws reflect efforts of lawmakers to recognize that whatever *other* goal a particular law was to achieve, DOD needs flexibility. Examples are the exceptions to requirements for open competition,[12] and the requirement to buy domestic end products.[13] Here, acquisition professionals take on the role of policy makers as they use the flexibility provided in these laws to prioritize mobilization needs over peacetime objectives of each law.

Even though these laws relieve DOD of certain requirements during a mobilization, they are administrative burdens, because determinations, justifications, waivers and exemptions must be prepared and approved at various levels. The extent to which these laws are a burden depends on the level of approval required, and whether blanket or class deviations are authorized.

During ODS, the extent to which contracting offices incurred these administrative burdens varied widely. However, even the contracting agencies which were liberal in granting ODS waivers and exemptions received requests for legislative relief from the associated administrative requirements.[14] The most significant lesson to be learned from ODS about laws of this type is that an administrative cost is associated with every exception from the normal way of doing business. Considered individually, the administrative burden may not

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11 When several contract awards were threatened by CoC delays, the SBA advised personnel to prioritize ODS CoCs. (author's personal experience.) This type of cooperation can help minimize the delays inherent in the CoC process, but does not address the larger question of why a contracting officer's determination of responsibility in support of a war effort is subject to being overturned by an agency interested in protecting small businesses.

12 The Competition in Contracting Act, 10 U.S.C. 2304(c)(1)-(7) includes exceptions for "Unusual and compelling urgency," "Industrial mobilization," and, "Public interest."

13 Buy American Act (41 U.S.C. 10) provides five exceptions including one for products acquired for use overseas, which throws many wartime requirements into the nonstatutory realm of the Balance of Payments Program (which also has a list of exceptions).

14 During the OSD roundup of proposed legislative relief for ODS, several activities (including the Defense Personnel Support Center, a DLA field activity) highlighted the cumulative burden on resources created by requirements such as the processing of Justification and Authority documents.

appear to be onerous or unreasonable.

Considered collectively, there is reason to challenge the extent to which the waiver and exemption provisions allow contracting offices to respond to mobilization challenges.

Indirect Administrative Burdens
The rest of the acquisition laws fall into this category. This categorization is not meant to minimize the significance of these laws during peacetime. It does suggest that during a mobilization every law adds to the burden of contracting officers. The indirect burden can be created by the sheer volume of clauses required in each contract, or the volume of representations and certifications generated. Examples are the requirement to comply with the Walsh-Healey Public Contracts Act, and affirmative action requirements for the hiring of handicapped individuals and veterans. 29 U.S.C., 38 U.S.C. and 41 U.S.C.

Another form of administrative burden may not be directly related to a mobilization requirement, but detracts from the contracting officer's ability to satisfy mobilization requirements, by mandating action in another area. Examples are the Freedom of Information Act, 5 U.S.C. and numerous reporting requirements imposed on contracting offices.

The indirect nature of the burden imposed by this category of law does not lend itself to identifying specific examples of problems that were created during ODS. The problem is a result of the cumulative impact of laws designed to impact the DOD acquisition process. The problem becomes more acute during a mobilization, when every action that does not add value to the mobilization effort detracts from its effectiveness.

Regulatory
One measure of the adequacy of acquisition regulations during an emergency is how well they capture the spirit and intent of law, without imposing additional unnecessary burdens, while providing users with maximum flexibility at reasonable approval levels. By this measure, regulations appeared to be adequate during ODS. In other words, the regulations provided the means to fully exploit most mobilization enhancing alternatives available under law. Whether approval for exploitation is at the appropriate level is a matter of subjective judgement, but DOD regulators have reviewed approval levels for appropriateness on several occasions.[15] Despite the general adequacy of the acquisition regulations, shortcomings were highlighted pertaining to some actions.[16]

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[15] The most recent comprehensive review of threshold and approval levels was being conducted during ODS as part of the Defense Management Review of the DFARS.

[16] Killen and Byther pointed out the need for more clear-cut authority to exempt overseas acquisitions during contingency from the Balance of Payment Program, FAR 25.302.

Another measure of the adequacy of acquisition regulations during mobilization is the ease with which they can be used under combat conditions. Several ODS participants complained that the body of acquisition regulations for, or pertinent to, a mobilization was not available. Contracting officers, trained and conditioned to operate in a peacetime environment, had to learn how to contract in a mobilization environment. This appeared to be more of a problem at in-theater contracting offices and smaller CONUS contracting offices without direct access to large policy staffs.

Another concern expressed by in-theater contracting personnel was that the authority to purchase locally, in lieu of from designated centralized managers, was not clear.

The regulatory lessons learned from ODS can be summarized as follows: The regulations provided most of the tools necessary to fully exploit the laws. However, everyone did not have equal knowledge of, or access to, all the tools.

Policy
In the defense acquisition process, policy comes in two forms — fixed and variable. Fixed policy is expressed in the regulations, directives, instructions, and manuals issued by DOD. Variable policy is contained within the parameters of the fixed policy. Variable policy is deferred to individuals throughout the system to set, in accordance with existing circumstances. Waivers and exemptions executed during a mobilization are examples of variable policy. Since different individuals will view the same situation differently, the extent to which peacetime policy will be waived in favor of mobilization policy will vary. The adequacy of fixed policy during ODS is essentially answered in the discussion of "Regulatory" above. The regulations are the fixed policy.

There was some criticism during ODS that certain variable policy makers did not make appropriate decisions for a mobilization environment. It would be inappropriate to conclude, from the information available, that some officials made *wrong* policy choices during ODS. As a lesson learned however, it is safe to conclude that individual policy choices will not be consistent, even in similar environments.

FRAMEWORK FOR RECOMMENDATIONS
Before addressing specific recommendations to improve our ability to contract during the next mobilization, it is useful to establish the framework within which those recommendations should be considered.

The Mission Is Defense
Even though the primary mission of DOD is sacrificed during peacetime by using the DOD acquisition process to achieve many goals, supporting the troops must be the overriding concern in all acquisition decisions and trade-offs during

a mobilization.

Graduated Mobilization Response

Graduated mobilization response (GMR) is the most viable approach to any future crisis. It is unlikely that our first effort to respond to any future crisis will be a declaration of war or national emergency. Under the GMR scenario, we cannot depend on sweeping contracting authority to save the day. Authority to support mobilization needs via contracting must be available as a matter of course. Authority to deviate from peacetime acquisition laws and procedures must be available at operational levels.

National Will

Mobilization signals the will of the nation to divert resources and activities to meet a perceived crisis. The signal should be clear not only to the international community and the general public, but to individuals supporting the mobilization throughout the government. The contracting officer should not be put through extraordinary administrative hurdles to provide support to troops in combat. The wrong signal is being sent to the contracting officer if support of a mobilization, at the expense of a social platform, must be justified.

Element Of Logistics

Logistics is the means of war. (Eccles, 1959 p.46) Good logistics support provides field commanders with opportunities to exploit battlefield situations. During ODS, field commanders had the benefit of approximately six months of logistics preparation to support a brief, but intense, ground war. The CONUS, regional, and in-theater contracting support was a critical element of that logistics support. Lawmakers and policy makers must realize that the efficiency and effectiveness of contracting offices during a mobilization is reflected on the battlefield. Making the right trade-off between social goals and mobilization support is easier if the relationship between the contracting office and the battlefield is recognized.

Flexibility And Timeliness

Flexibility and timeliness[17] are critical to the success of future contracting in support of mobilization. Flexibility is more important than at any time in the past for several reasons. We cannot predict when, where, or who we will be fighting. The degree of host nation or allied support will vary from conflict to conflict. We will need flexibility to contract from anywhere in the world, in

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17 Flexibility and timeliness are two of the four mobilization tenets set forth in the Draft DOD Joint Pub 4-05. The other tenets, "objective" and "unity of effort," are not as critical to the contracting aspect of mobilization.

virtually any market open to us during a conflict. From this perspective, we should not create legislative and regulatory conditions that will limit our ability to optimize CONUS, regional, and in-theater contracting platforms.[18] Also, as the number of contractors doing business with DOD in peacetime shrinks, we will need the support of nondefense contractors during a mobilization. Often, DOD may find itself having to accept someone else's rules of engagement in the contracting arena.

At the outset of a mobilization, acquisition professionals must convert on short notice. Timeliness during the mobilization requires quick reaction to the changing circumstances of the conflict and the ability to contract for supplies and services expeditiously. Administrative requirements that add no value to the mobilization effort must be recognized as detracting from the overall timeliness of contracting personnel.

RECOMMENDATIONS

Legislative
1. Every law pertaining to the DOD acquisition process, should include a mechanism for prioritization of national defense needs during a mobilization. The mechanisms should be available at an operationally effective level, for classes of items or actions, and involve minimum administrative effort.

2. Simplified procedures should be available to mitigate the cumulative impact of legislation designed to achieve peacetime social goals.The most obvious answer is to increase the threshold for application of all socioeconomic legislation to the simplified small purchase threshold.[19] A force multiplier of this action would be to increase the threshold during mobilizations for contracting offices. During limited mobilization efforts, authority to use simplified procedures may ' ·   ropriate only for actions in support of the mobilization. As the mobilization efforts expand, the simplified criteria should apply to all contracts.

Regulatory
Regulators should take a page from Hippocrates and vow to "at least do no harm." Regulations should maximize the flexibility under the law so users can

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18 There was evidence during ODS (Byther and Killen) that some contracts which would have otherwise been awarded in CONUS, were awarded in-theater to take advantage of the $100,000 small purchase threshold.

19 Currently $25,000 as set forth in the Office of Federal Policy Procurement Act. The threshold is to be adjusted for inflation every five years beginning in 1995.

apply their knowledge, skills and abilities to meet the widest array of contin-
gencies. Regulations that provide flexibility and decision-making authority to
the lowest practical levels are consistent with the goal of having a professional
acquisition workforce.[20]

A compendium of acquisition regulations applicable during a mobilization
would be useful to acquisition personnel as they transition from peacetime to
mobilization contracting. However, the FAR is not the appropriate place for
such a compendium.[21] In spite of its size, the FAR is rarely redundant. The basic
rules of contracting are spelled out once. Thereafter, coverage pertaining to a
particular type of contracting (services, construction, research and development,
etc.) discusses only elements of contracting unique to that type. In other words,
Part 37, Service Contracting, is not a handbook on how to enter into a service
contract. A contracting officer must be knowledgeable in many other aspects of
the FAR to enter into a service contract.

Exceptions that may be useful under a mobilization may also be useful under
other circumstances and are included in the FAR along with the rule being
addressed. A contracting officer trying to list all of the tools that may be available
during a mobilization may lose sight of opportuni' :s available elsewhere in the
FAR.

Some practical problems occur when using the FAR to assimilate contin-
gency contracting provisions. Most notable is that under the GMR concept,
there will be no one set of conditions or authorities appropriate for every
mobilization. Another problem is that it may be difficult to get all players
(including non-DOD FAR users) to agree to what should be included under
contingency contracting.

A more practical answer to the problem of having access to the full range of
opportunities during a mobilization would require each level of authority in the
contracting chain to maintain lists of what legislative and regulatory alternatives
are available that require action at that level. Individual decisions to take
alternative actions will depend on the circumstances of the mobilization.

Policy

There is no way to exercise absolute control over individuals entrusted with
making policy decisions during a mobilization. The responsible acquisition
decision makers should accept that senior officials have decided to reprioritize
the concerns addressed by various socioeconomic and oversight laws. Within
those parameters, difficult decisions and trade-offs will have to be made. One
way to influence behavior under such circumstances, is to minimize the degree
of difficulty and risk associated with choices available to the contracting officer.

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20 A goal of the Defense Acquisition Workforce Improvement Act, 10 U.S.C. 1746.

21 Killen and Byther suggested a new FAR Part for contingency contracting.

Fear of not meeting socioeconomic goals or of being criticized for abuse of waiver authority never should be on a contracting officer's mind once the shooting starts. Acquisition officials at all levels must understand the implications and parameters of mobilization, so the DOD acquisition community can approach a mobilization with some degree of predictability and cohesiveness.

CONCLUSION

Acquisition laws and regulations did not create any problems during ODS that could not be resolved within the generous and forgiving circumstances of that crisis. There is reason to believe the same laws and regulations may be an impediment in future mobilizations, under different circumstances. The potential problems can be avoided with little cost and minor harm to the peacetime benefactors of socioeconomic laws. A little reflection on why DOD is in business, and what our priorities should be when we send troops into battle should go a long way toward helping us to refocus during a mobilization. Of the 50 potential ways to screw up the perfect mobilization, the failure to award a timely contract may be the least excusable.

REFERENCES

Byther, D.(1991, November-December). Federal Acquisition Regulation, Friend or Foe? *Army Logistician*, p. 35.

Clem, H.C.(1983). Mobilization Preparedness, National Defense University. Contains one such listing of mobilization classes of actions.

Culver, C.M.(1984). Federal Government Procurement - An Uncharted Course Through Turbulent Waters. National Contract Management Association. *Contract Management.* Washington, DC.

Danzig, R.(September, 1983). *A Review of the Adequacy of Principal Statutory Authorities Affecting DOD Surge and Mobilization Capacity.* Report prepared at the request of the Under Secretary of Defense (Policy), 34, 35.

Department of Defense.(1993, February 22). *Draft DOD Joint Pub 4-05.* Explains Graduated Mobilization Response (GMR) and describes the three stages of GMR as "Planning and Preparation" (Stage III), "Crisis Management" (Stage II), and "National Emergency" (Stage I). I-1, I-6, I-7.

Department of Defense. (1987). *Acquisition Policies During Mobilization.* DOD Logistics Systems Analysis Office (LSAO). Prepared at the request of the Deputy Assistant Secretaries of Defense for Logistics and Procurement.

Department of Defense.(1991, January 28). "DOD Pressing for Waiver of Acquisition Laws to Meet Urgent War Needs," *Federal Contracts Report.* Vol. 55, p. 85.

Eccles, H.E.(1959). *Logistics in the National Defense.* The Stackpole Company.

Federal Acquisition Regulation (FAR). Defines contract as including all variations of legally binding agreements. Subpart 2.1.

Killen, K.E. & Wilson, G.P. (1992). *An Analysis of Contracting Actions by United States Based Department of Defense Organizations to Support Operations Desert Shield and Desert Storm.* Thesis, Air Force Institute of Technology.

Section 1121, Public Law 101-510.

5 U.S.C. 552.

10 U.S.C. 2326.

29 U.S.C. 793.

38 U.S.C. 2012.

41 U.S.C. 35-45.

Variance Analysis Within C/SCSC Programs

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In a 1990 article Christensen highlights the role of analysis in programs subject to the Department of Defense (DOD) Cost/Schedule Control System Criteria (C/SCSC) (Christensen, 1990 & Kerzner, 1984). Variance analysis is performed to determine causes of variances in program cost, schedule or both, and development of proposed resolution of problems indicated by the variances. At Hughes Aircraft Company's Ground Systems Group (GSG), this analysis process typically begins as a qualitative investigation at month-end, even before exact quantitative data is available. Distribution of a C/SCSC Analysis Report adds the missing quantitative data. Narrative analysis of significant variances is provided to the program management office (PMO) for inclusion in the program manager's (PMs) monthly engineering reports. Significant variances are identified by application of "variance thresholds" to the data related to each cost account. This identifies those accounts having significant potential impact on the program on the basis of cost/schedule risk potential. This article describes the variance analysis process used on typical C/SCSC programs (Hughes Aircraft Co., 1992).

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DISCUSSION

A cost account manager (CAM) must meet the technical performance, cost and schedule requirements for an assigned work effort. One tool that assists the CAM in meeting the schedule and cost responsibilities is a periodic variance analysis. This article addresses one area of financial management — variance analysis — and provides some guidance in how CAMs should perform these analyses. Slemaker (1985) identified three characteristics of an effective project control system. Such a system would have: (1) objectives and standards against which accomplishment can be measured, (2) periodic communication of performance status, and (3) a means to affect future performance. At GSG, well-disciplined procedures are followed to monitor and report on cost and schedule performance and planning on C/SCSC programs (Department Of Defense Instruction 5000.2, 1991). These procedures consist of both human (the CAMs) and software analyses as discussed in this article.

The CAMs receive weekly and monthly reports and are responsible for preparing narrative cost/schedule variance analyses as they occur (see Figure 1), or are predicted to occur for the duration of their cost account(s) as planned on Work Package Planning Sheets (WPPS). The Narrative Variance Analysis Report (Figure 1) identifies the variant conditions and is used by the CAM to explain the cause, impact and planned corrective action of each variance. This report is supplied automatically by a Management Control System (MCS). A response is required from the CAM if preset variance thresholds are exceeded.

The preset variance thresholds are used to monitor the status of all cost accounts on the program. Thresholds are used for the current fiscal month and the cumulative planned activity to date.

Current fiscal month thresholds are typically set at ± 5 percent and $\geq \$10$ K (Slemaker, 1985). In other words, if either the "Cost Variance Percentage" or "Schedule Variance Percentage" or both exceed the threshold and the dollar variance is equal to or greater than $10 K, the variance must be discussed on the Narrative Variance Analysis Report submitted to PMO by the CAM.

The C/SCSC Analysis Report (Figure 2), generated by the MCS on a monthly basis, contains the following message:

	COST*	YES
VARIANCE EXCEEDS THRESHOLD?	SCHEDULE *	YES
	AT COMPLETION*	YES

* YES or NO, as appropriate

if a Narrative Variance Analysis Report must be completed by the CAM.

Cumulative plan-to-date thresholds are typically set at ≥10 percent and $20K. Opening the dollar "window" to these higher values acknowledges difficulty maintaining tight control over money as a percentage of a large plan and identifying potential problems early in the plan, where start-up

Figure 1. Narrative Variance Report (Sample)

problems such as staffing requirements, make schedules difficult to meet. Otherwise, cumulative-to-date is treated the same as the current month.

Figure 2. C/SCSC Analysis Report (Sample)

Latest Revised Estimate (LRE) thresholds also are typically set (Thomsett, 1988) at ±10 percent and ≥ $20K. Variances in this category are treated the same as other types of variances but must be given closer scrutiny by the CAM as the effort nears its end.

Calculations of variances are made using the following formula:

$$\text{Schedule Variance} = \frac{\text{BCWP - BCWS}}{\text{BCWS}} = \%$$

$$\text{Cost Variance} = \frac{\text{BCWP - ACWP}}{\text{BCWP}} = \%$$

where:
BCWP = Budgeted Cost of Work Performed
BCWS = Budgeted Cost of Work Scheduled
ACWP = Actual Cost of Work Performed

Variances exceeding established thresholds are analyzed in detail by the CAM and a narrative explanation written for inclusion in the internal Variance Analysis Reports and external Problem Analysis Reports. Such analyses are also initiated for nonsignificant variances for internal or external reporting purposes if the variances represent unexpected problems or have potential impact because of exhibited trends. To assist in detecting such trends, CAMs are provided with a Weekly Responsibility Summary Report. Each account exceeding established thresholds is identified by an asterisk (*). When these are received, each CAM reviews individual account status to identify variant trends or potential problems. Unfavorable variances generally are caused by a combination of (1) erroneous basic assumptions or (2) control problems.

Reports.
When variance thresholds are exceeded, CAMs must explain to management (line, program or both) exactly what went wrong with their accounts during the prior period and why. Explanations must identify the underlying causes of the variances and not repeat the obvious as identified on the computer-generated reports. Explanations must be complete and include plans for corrective action ("get-well" or "recovery" plans), when warranted. When preparing these reports, the CAM should not expect management to interpret the CAM's variance explanations and independently determine corrective actions, but should write the reports in clear and unambiguous language. In general, there are three common explanations and corrective actions possible for variances:

1. Variances caused by timing differences which will be self-correcting in future reporting periods. No action is required.

2. Variances caused by incorrect the account was first planned. In this case the LRE must be modified by the CAM.

3. Variances caused by expenditures or work not being controlled. Corrective action by the CAM is needed to eliminate the unfavorable trends.

Cost and schedule variance analyses are performed by the CAM at the level of detail and cost elements necessary for a complete explanation of the variance. Specific areas to be addressed are listed below:

Cause.
Contributors to cost variances include:

- Changes in labor rates

- Changes in burden rates

- Changes in planned manpower level/mix (senior vs. less senior)

- Attrition in labor force

- Material price

- Minimum buy quantity variances

- More accurate definition of the scope of work, and

- Other direct costs such as computer time, reproduction, travel, etc., being greater than anticipated.

Resolution (Corrective Action).
Planned resolutions include a detailed explanation of what corrective action is being taken or will be taken within the current estimate at completion (EAC) for the account, how that action is anticipated to impact the cost variance, and when that corrective action will be implemented and effective. Corrective action also should include an analysis and narrative report of the impact on interfaces with other organizations and the total project and should evidence coordination of the proposed resolution, when warranted.

Analysis

Analyses are made for each element of cost in an overrun or underrun situation, with attention to direct labor wage rates and burden labor rate variance impacts, and price and usage variance for separately identified high-dollar material items, etc.

Schedule Slippages

Specific mention should be made of significant slippages in schedule or work around plans, identifying current and projected impact.

Schedule Problem Areas

Major current or potential problem areas should be commented on for possible corrective action by either line or program management or both. A Corrective Action Log should be established by individual CAMs to ensure follow-up action is being taken.

Schedule Variance Analysis

Causes, impact on other activities, corrective actions taken or to be taken, prognosis, recovery dates, status of recovery plans, etc., should be addressed. Schedule variances are always related to work package problems: late start, late completion, etc. In addition, the Narrative Variance Analysis Report must address the potential impact on cost that may be caused by the schedule variance.

ANALYSIS CASES

Thirteen cases for comparing planned vs. actual performance have been identified. These are shown in the Table 1 and each case is described using the relationships:

- Cost Variance (CV) = Budgeted Cost of Work Performed—BCWP (or actual earned value) - Actual Costs [incurred for] Work Performed (ACWP)

- Schedule Variances (SV) = BCWP - Budgeted Cost of Work Scheduled — BCWS (or planned work) where BCWP, BCWS and ACWP are defined.

- For each case, a positive (+) CV means the effort is underspent and a positive (+) SV means the effort is ahead of schedule.

Variance Analysis Case Studies

CASE	BCWS[a]	BCWP[b]	ACWP[c]	SV[d]	CV[e]
1	$X	$=X	$=X	0	0
2	X	0.50X	0.75X	-0.50X	-0.25X
3	X	0.75X	0.50X	-0.25X	-0.50X
4	X	0.75X	0.75X	-0.25X	-0.25X
5	X	0.75X	X	-0.25X	0

CASE	BCWS[a]	BCWP[b]	ACWP[c]	SV[d]	CV[e]
6	X	1.25X	X	0.25X	0
7	X	1.25X	1.25X	+0.25X	+0.25X
8	X	X	0.75X	0	-0.25X
9	X	X	1.25X	0	+0.25X
10	X	0.75X	1.25X	-0.25X	0.25X
11	X	1.25X	0.75X	+0.25X	-0.25X
12	X	1.25X	1.50X	+0.25X	+0.50X
13	X	1.50X	1.50X	+0.50X	+0.50X

a: Budgeted Cost of Work Scheduled (Planned Work)

b: Budgeted Cost of Work Performed (Actual Earned Value)

c: Actual Cost of Work Performed

e: Schedule Variance

f: Cost Variance

Cases:
In each of these cases, the concept of "earned value" was used to predict trends in cost and variance analysis.

1. This case shows that planned work is being performed on schedule (ACWP = BCWP = BCWS).

2. Costs are behind schedule and the cost account appears to be underrunning. Work is being accomplished at less than 100 percent efficiency since ACWP exceeds BCWP. This indicates a cost overrun can be anticipated. This situation is even worse, as the cost account is also 50 percent

behind the schedule defined on the WPPS. This is one of the worst possible cases.

3. In this case, there is good news and bad news. The good news is that work is being performed efficiently. The bad news is that the work is behind schedule, as defined on the WPPS. The "good news" could tend to obscure the bad news giving a false sense of security!

4. The work is not being accomplished according to the WPPS schedule (i. e., it is behind schedule) but costs are being maintained for what has been accomplished. This could indicate a staffing problem.

5. Costs are on target with the schedule as defined on the WPPS, but the work is 25 percent behind schedule because it is being performed at 75 percent efficiency.

6. The cost account team is operating at 125 percent efficiency, work is ahead of schedule by 25 percent but within scheduled costs. The team is performing at a more favorable position on the learning curve, as compared to Case 5.

7. The team is operating at 100 percent efficiency and work is being accomplished ahead of schedule. Costs are being maintained according to budget.

8. Work is being accomplished properly and costs are being underrun. Normally this would be a good situation: however, further analysis of the amount of the underrun would be beneficial to the program.

9. Work is being accomplished properly: however costs are being overrun.

10. Costs are being overrun while the plan is being underaccomplished. Work is also being accomplished inefficiently. This situation is bad and requires that the CAM provide an explanation in greater detailed.

11. Performance is ahead of schedule, and costs are lower than planned. This situation results in a large profit or money being reallocated, depending on the contract.

12. Work is being done inefficiently and a cost overrun could possibly occur. However, performance is ahead of schedule The overall result may be either a cost overrun or complete ahead of schedule.

13. Although actual costs are greater than budgeted, performance is ahead of schedule and work is being accomplished efficiently. This is a good situation and a Narrative Variance Analysis Report is not required.

SUMMARY

This article has reviewed some concepts applicable to performing a cost or schedule variance analysis. Examples were given of several report formats in use at GSG. It was shown that the data provided in these reports can be analyzed and compared to 13 "cases" identified by Kerzner.

REFERENCES

Christensen, D. S. (1990, July-August) The Role of Analysis in C/SCSC, *Program Manager*, 26-29, 33, (1984)

Kerzner, H. *Project Management: A Systems Approach to Planning, Scheduling, and Controlling* (2nd ed). 742-743.

Ground Systems Group, Hughes Aircraft Company, (1992, Februrary) *Management Control System Description for Implementing Cost/Schedule Control System Criteria (C/SCSC)*, Fullerton, CA

Department of Defense. (1991, February) *Defense Acquisition Management Policies and Procedures DOD Instruction 5000.2,*

Department of Defense. (1991, February) *Defense Acquisition Management Documentation and Reports. DOD Manual 5000.2-M,* .

Siemaker, Chuck M. (1985) *The Principles & Practice of Cost Schedule Control Systems*, Chapter 8, "Performance Measurement and Control." Princeton, NJ: Petrocelli Books

Thomsett, Michael C. (1988) *The Little Black Book of Budgets and Forecasts.* New York: AMACOM, 81.

BOOK REVIEWS

At A Crossroads:
How Did We Get There?

(Lareau, W. (1991), *American Samurai*. New York: Warner Books; Dobyns, L._& Crawford-Mason, C. (1991), *Quality or Else*. Boston: Houghton Mifflin Co.; Pasmore, W.A. (1988), *Designing Effective Organizations*. New York: John Wiley & Sons; Imai, M. (1986), *Kaizen*. New York: Random House.)

Reviewed by
LtCol Chris McWilliams, USAF

A merica is at a crossroads. Serious, far-reaching decisions are at hand. How should American industrial leadership direct industry into the markets of the 21st century? Japan has risen literally from the ashes and debris of World War II to become arguably the premier economic power of the past decade. How did that happen? Can Americans learn from the Japanese or others and apply those lessons to solving our own problems? More specifically, what can government services, such as the Air Force, do to become more effective, efficient, and viable as business rather than bureaucratic entities? The four books read, and various other sources, attempt to answer these questions, and they provide remarkable insight into the social dynamics that brought America to its current dilemma.

It may be argued that America's industrial decline is a direct result of America's winning WWII and its prosperity in the decades afterward. As Lareau notes, the problems of American industry are rooted in American heritage and business practices. During the war, American industry was virtually boundless. Tanks, planes, ships, vehicles, and equipment of every function and description spewed from American factories at unprecedented rates to support the war effort. Technological advancements came one after another. America had truly become democracy's arsenal, supplying goods to the Free World to combat the Axis powers. Our ability to produce quantity overcame the enemy's limited production of better weapons. Rapid replacement of combat losses was the primary goal of American industry. Quality took a back seat to quantity (Dobyns

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& Crawford-Mason). Quantity management and mass production won the war on the industrial front.

Dobyns & Crawford-Mason agree that heritage is the natural forerunner of the perspective and attitude of postwar industrial America. The industrial base of Japan and Germany had been bombed into oblivion. Even most of America's allies had little remaining industrial foundation, also due to war-incurred damages. Therefore, America stood alone as the sole provider of industrial goods required in the postwar world. Quantity remained paramount. Quality was balanced with the cost of attaining it (Dobyns & Crawford-Mason). Profits were good and the markets hungry. If a few products weren't just right, did it really matter? They were available.

After WW II, General Douglas MacArthur began reconstruction of Japanese industry. It was a small, slow beginning. He required radios, and started rebuilding Japanese industry in the communications field (Dobyns & Crawford-Mason). He brought Homer M. Sarasohn to Japan as an advisor, who in-turn brought Charles Protzman to assist him (Dobyns & Crawford-Mason). Together, Sarasohn and Protzman taught the Japanese how to manage modern manufacturing firms. It was practical, hands-on instruction, not classroom theory. Sarasohn also invited W. Edwards Deming to Japan to lecture on the quality philosophy he developed for the War Production Board. Deming's instruction revolutionized Japanese industry. He altered its foundation by teaching how to use statistics to get better results in manufacturing (Dobyns & Crawford-Mason). Deming convinced the leadership of the emerging Japanese postwar society of the soundness of his industrial management baselines. By 1951, Japanese managers were learning management of quality, engineers were learning statistical quality control, and the most senior industrialists were learning the importance of quality (Dobyns & Crawford-Mason).

It wasn't so much that American industry didn't know about statistical quality control or willingly chose to ignore it. But after the war, the U.S. was the engine of world growth (Dobyns & Crawford-Mason). Since profits were to be made through quantity management and mass production, no industrialist would willingly choose to stop and totally redirect his company's efforts to support a premise that no one was sure would result in greater profits anyway (Dobyns & Crawford-Mason). But all the while, the Japanese kept learning and refining Deming's philosophies of statistical quality management.

Thus, we realize how U.S. industry arrived at its current crossroads. What will bring America back on track to greater successful productivity? Will it take only minor alterations in philosophies and business practices or will it require a top-down overhaul of our entire industrial community? Unfortunately, it will require the latter and will likely involve some degree of societal change.

Pasmore defines a social system as an organization's people, their beliefs and attitudes, reactions to the work environment/arrangement, company policies, design features, and work relationships. He stipulates that organizations exist

to meet human needs, are subject to human influence, and their effectiveness is defined in human terms. One major reason for Japan's (and Germany's) success is that it recognizes the deep interpersonal relationship between national societies (personified by the workers) and the company. They understand that individual motivation is the engine that drives an organization to succeed (Dobyns & Crawford-Mason). Unions and industry attitudes toward them illustrate this point.

Dobyns and Crawford-Mason note that too frequently in the United States the attitude between the company and unions is confrontational, not cooperative. In Japan, the unions work with management toward the common good of corporate goals. Japanese laborers are organized into enterprise unions rather than craft unions. Additionally, each worker has, and is encouraged to develop, multiple skills which lead to reassignment rather than redundancy. Imai cited numerous examples of management/labor seminars at Japanese companies rather than protracted and bitter labor negotiations. In fact, Imai accurately points out that in comparison to the above Japanese models, even U.S. unions could be the worker's enemy. Craft unions frequently deprive members of opportunities to change, to work better and more efficiently by dictating who is allowed to work a given job exclusively. Once environmental constraints and considerations are recognized and addressed, what practices should a company adopt to be successful? How should they organize?

What roles should management and the workers play? What is Total Quality Management (TQM), and how does a company get some?

As noted, a company is a social entity. Management and the workers form its population. Organizations create their own relative environments, deciding what they will pay attention to or ignore (Pasmore). Unfortunately, they tend to understand and approach problems as they always have, applying fixes/decisions that have worked in the past, and are slow to understand/ recognize/apply new concepts (Pasmore). That preconceived mindset must now change if America is to begin to recover from its deepening industrial malaise. American industrial leadership should begin the journey back to preeminence by copying proven methods of those who are successful (i.e., the Japanese), and they must realize that people are their top, #1 resource (Lareau). In fact, individual motivation is what drives an organization to success (Pasmore). Imai observes that improvement in the United States means technological breakthrough or a product of machinery. In Japan, it means people. He has named the Japanese strategy *Kaizen,* which means gradual, unending improvement. It is the single most important concept in, and is central to, the Japanese strategy (Imai). It stresses management's support of, and stimulation for, the worker's efforts to improve the process (Imai).

The American workforce is potentially the best in the world, but it falls short of that distinction because of poor/inadequate training and schooling (Dobyns-Crawford-Mason). Formal training should be paramount, not merely on-the-job

(Lareau). But because of union restrictions, the company's attitude that workers are expendable, layoffs, and worker migration to different employers, U.S. industry doesn't train well at all. That is unfortunate, because Japan has realized, as evidenced through Kaizen, that the worker knows his job better than anyone, is reliable if given a chance (trust), and is in the best position to improve his job or discover/correct errors or inefficiencies associated with it (Dobyns & Crawford-Mason). Pride in one's work is a fundamental criteria for success Dobyns & Crawford-Mason. Imai stresses that Total Quality Control (TQC) starts with training and ends with training for both managers and workers. As new improvements are made, they become the standard, and improvements should evolve from them. Management is the crucial aspect of instituting quality into the American industrial base. Japanese managers are specifically tasked with maintaining and improving standards, and the Executive Commitment is to manage change (Imai). Kaizen takes management's time and effort, and dollars (or yen) are a poor substitute for either (Imai). But more than just management's time is necessary. Managers — from the top level down — have the responsibility to set goals, establish the corporate plan, and strive to ensure the workers have the where-withal to do the job.

The American industrial dilemma is not industrial in nature, it is behavioral. Survival of American industry, according to Dobyns and Crawford-Mason, is a matter of leadership and eliminating business management's resistance to change (Dobyns & Crawford-Mason). America's problem rests in its institutional attitudes, not in how the workers accomplish the job. Managers and designers recognize that constraints exist, and they proceed to choose selectively what goals and values they will support/embrace. Consequently, they create their own relative organizational environments by deciding what factors they will pay attention to or ignore (Pasmore). Lareau bluntly points out that management's task is to develop the top-level plan (i.e., goals), but managers have no business telling the workers how to implement the plan (do their job) because managers don't know enough about the intricacies of individual jobs to do anything helpful. Instead, management should derive the company plan directly from customer needs. The plan should be a top-level set of guiding principles that demand quality first; are geared toward group performance, open communication, logistic and strategic issues; and express the value of the employees (Lareau). It should not degenerate into a step-by-step set of employee instructions or job guides. Imai emphatically agrees that management's job is to set and maintain the company's standards. Continually (re)defining the customer, Imai stipulates, is management's top priority. The West's biggest failing, he maintains, is management's lack of an improvement philosophy. Deming, Juran, Crosby and Feigenbaum, America's recognized TQM experts, agree that management is responsible for the problems within the system, and that it's up to management to fix it (Dobyns & Crawford-Mason).

The road back starts with the workers. They must see, understand, and *believe* that management really can be trusted, that it is for the good of the company *and* the employees, and that they are committed to what they say (talk is cheap) (Dobyns & Crawford-Mason). Management must eliminate divisive perquisites and flatten the managerial pyramid (Lareau). American companies historically have 7-8 managerial levels compared to 3-5 in Japan. Crossfunctional relationships, according to Imai, is management's major organizational tool to realize TQC improvement goals. By any name, employee teamwork, whether with management or other divisions of workers, will raise productivity, which engenders corporate success (Dobyns & Crawford-Mason).

These concepts, while applying directly to American industry, also have a place with the military services. Military and other bureaucratic organizations are by definition at odds with the needs of mature adults, and the organizational structure could destroy productive motivation (Pasmore). With the many insights and lessons cited above, I believe that the military services can be enlightened, appreciate the working troops, provide positive motivation, and still accomplish assigned missions in an outstanding manner. While the military is not a democratic society, enlightened commissioned officers and NCOs may successfully apply a variety of TQM premises to military management and organizational processes.

A primary message gleaned from each of the above authorities is "People Count." Train them, treat them as winners, care for and about their needs, solicit and accept their suggestions, let them learn from their errors, and your effort will succeed. Management should set forth standards and goals in a top-level, macro master plan and let the workers determine how they will accomplish it. Like the Japanese industries, the military manager should maximize available assets, not depending on the big technological breakthrough or experienced personnel "promised" to be inbound. As the roles of leaders change, military well as civilian managers may still retain authority while actively practicing TQM. They may grow from strictly directing to coordinating, encouraging the creation of, and participation in, work groups, either within a single organization or among several groups. In communicating plans or goals, managers can also reinforce, provide feedback, train, facilitate and motivate. Japanese TQC is directed at education, system development, policy deployment, crossfunctional management, and quality deployment (Imai), and there is no reason why the American military (or industry) can't focus in the same direction. Business (military or civilian) ultimately consists of three building blocks: Hardware, software and humanware.

Power has shifted worldwide from the seller to the consumer (Dobyns & Crawford-Mason). In America, the Malcolm Baldrige Award parallels the Japanese Deming Award recognizing "World Class" companies that have instituted the principles of quality management. More American industries must strive to achieve Baldrige goals, which means managers must first:

recognize the necessity for change; second: understand the requirements for change; third: work constructively on methods of change; fourth: continue to try to improve in an iterative manner. This plan closely resembles Deming's "Plan, Do, Check, Act" cycle as practiced ' ' Japanese industry. American managers — civilian and military — can adhere to the four key elements of global companies: people matter; quality has replaced quantity; quality improvements are occurring at an unprecedented rate; the customer drives the economy. Total Quality Management works; it's been proven. It remains for enlightened managers to employ and benefit from its tenets.

REFERENCES

Lareau, W. (1991). *American Samurai.* New York: Warner Books. p. 15.
Dobyns, L. & Crawford-Mason,C. (1991). *Quality or Else.* Boston:
Houghton Mifflin Co. p. 18.

Ibid., p. 18.

Ibid., p. 18.

Ibid., p. 19.

Ibid., p. 19.

Ibid., p. 16.

Ibid., p. 17.

Ibid., p. 18.

Ibid., p. 20.

Pasmore, W.A. (1988). *Designing Effective Organizations.* New York:
    John Wiley & Sons. p. 25.)

Dobyns & Crawford-Mason. *op. cit.,*p. 19.)

Imai, M. (1986) *Kaizen.* New York: Random House. p.182.

Ibid., p. 165)

Pamore, *op. cit.,* p. 16.

*Ibid.,*p. 16.

Lareau, *op. cit.,* p. 16.

Pasmore, *op. cit.*, p. 26.

Imai, op. cit., p. 4.

Ibid., p. xxix.

Ibid., p. 18.

Dobyns & Crawford-Mason. *op. cit.*, p. 107.

Lareau, *op. cit.*, p. 33.

Dobyns & Crawford-Mason. *op. cit.*, p. 112 and Imai. *op. cit.*, p. 111.

Dobyns & Crawford-Mason. *Ibid.*, p. 112.

Imai. *op. cit.*, pp. 58-63.
Ibid., p. 2.

Ibid., p. 27.

Dobyns & Crawford-Mason. *op. cit.*, p. 156.

Pasmore. *op. cit.*, p. 17.

Lareau. *op. cit.*, p. 37.

Ibid., p. 238.

Imai. *op. cit.*, pp. 29, 53.

Dobyns & Crawford-Mason. *op. cit.*, p. 97.

Dobyns & Crawford-Mason. *Ibid.*, p. 98 and Lareau. *op. cit.*, p. 234.

Lareau. *Ibid.*, pp. 24 305 and Pasmore. *op. cit.*, p. 38.

Imai. *op. cit.*, p. 128.

Dobyns & Crawford-Mason. *op. cit.*, pp. 116, 147.

Pasmore. *op. cit.*, p. 39.

Imai. *op. cit.*, p. 14.

Dobyns & Crawford. *op. cit.*, p. 238.1.

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